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**THE TRACK OF PONCE DE LEON IN 1513**

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(Map on p. 722)

The story of Ponce de Leon's discovery of Florida in 1513, just four centuries ago, rests essentially upon a single text, the paraphrase of that explorer's relation, made by the historian Herrera and forming two chapters of his *Historia General*. The original relation is not known to be existent. That the charts of Ponce de Leon reached Spain and were used in the construction of other maps is evidenced by the cartographic appearance of Florida soon after his discovery, but Herrera seems to have had no knowledge of these charts, nor do well-known type maps like that of Ribero show clearly any first-hand acquaintance with the geographic records of Ponce de Leon. It is with some satisfaction, therefore, that one may direct attention to the less known Freducci map, of which Casanova published in 1894 a photographic reproduction and accompanying monograph,<sup>1</sup> for in the Florida of the Freducci map appear nomenclature and geographic outlines that unmistakably derive from the charts of Ponce de Leon. The Freducci map is of Italian construction, having been made at Ancona by Conte Ottomanno Freducci. It is now without date, but Casanova fixes its time as 1514 or 1515. Its representation of Spanish American regions, drawn from Spanish sources, presents nomenclature only slightly touched by Italian influence. So soon was this map made

<sup>1</sup> *Carta Nautica di Conte di Ottomanno Freducci*, in *Pubblicazioni del R. Istituto di Studi Superiori*, Florence, 1894. For ordinary reference to the chart Mr. Harrisse's tracing in *Découverte et Évolution Cartographique de Terre Neuve*, p. 81, will be sufficient. A later map by Freducci, reproduced in Kretschmer's atlas, copies the Florida of his early map, but so conventionalizes the outlines that their historical significance is destroyed.



after the Florida discovery of 1513 that there had not been time for any considerable recopying of Ponce de Leon's records. The Fredueci Florida must have derived almost directly from the explorer's charts, and it may, consequently, be ranked as a source document supplementing the text of Herrera.

It is true that Herrera presents with his history a map showing the region of the West Indies and Florida, but that map has no relation to the historian's text concerning Ponce de Leon. It is a derivative map, showing outlines that have degenerated from their original sources through repeated copyings. As a source document it is without value as regards Florida discovery. The Fredueci map, on the other hand, by preserving the data of Ponce de Leon, makes it possible to interpret the text of Herrera as it here follows in terms of the modern map and to give his narrative a preciseness of meaning not otherwise possible.

"Juan Ponce de Leon finding himself without office, through Juan Ceron and Miguel Diaz having been restored to those of the island of San Juan, and seeing himself rich, determined to do something with which to gain honor and increase estate; and as he had news that lands were found to the northward he resolved to go to explore toward that part; for which he equipped three vessels, well supplied with provisions, people, and seamen, which for the purpose of exploring are most necessary.<sup>2</sup>

"He sailed from the island on Thursday, in the afternoon, on the 3rd of March, setting out from the harbor of San German. He went to Aguada, in order to take from there his course. The night following he sailed to sea, to northwest a quarter by north, and the vessels proceeded eight leagues of a day's run, until the sun rose. They went on sailing until on Tuesday, the 8th of the said month, they came to anchor at the banks of Babueça, at an island that they call El Viejo, which is in twenty-two and one-half degrees. Next day they anchored in an islet of the Lucayos called Caycòs. Presently they anchored in another called La Yagùna, in twenty-four degrees. On the 11th of the same month they reached another island called Amaguayo, and there they were at stop for repairs. They passed on to the island called Maneguà, which is in twenty-four and one-half degrees. On the 14th they reached Guanahani, which is in twenty-five degrees and forty minutes, where they prepared one vessel for crossing the weatherward gulf of the islands of the Lucayos. This island Guanahani was the first that the admiral Don Christoval Colon discovered, and where, in his first voyage, he went on land and named it San Salvador. They set out

<sup>2</sup> Ponce de Leon also obtained a royal patent authorizing him to discover, possess and colonize the island of Biminy. The text of this patent is in *Colección de Documentos Inéditos*, XXII: 26. A translation will be found in the *American Catholic Historical Society Records* for Dec., 1912.

from here, running northwest, and on Sunday, the 27th, which was the day of the Festival of the Resurrection, which commonly they call 'of Flowers,' they saw an island and did not examine it. And Monday, the 28th, they ran fifteen leagues by the same direction, and Wednesday they proceeded in the same way, and afterward, with bad weather, until, the 2nd of April, running to west-north-west, the water lessening to nine fathoms at one league from land, which was in thirty degrees and eight minutes, they ran along the length of coast seeking harbor and at night they anchored near the land in eight fathoms of water."

The region of the eastern Bahamas had found its way into Spanish maps before Ponce de Leon's voyage, with a varied nomenclature. Freducci's sources for this locality bore names differing from those in Herrera's relation, but in other maps than Freducci's may be found the names used by Ponce de Leon. The term 'baxos de Babueça' in the earlier years was applied to the series of shoals extending from Grand Turk Island easterly to Navidad Bank. In later years the term became restricted to the Mouchoir Carré Bank and finally became disused.<sup>3</sup> El Viejo, Old Man, of Ponce de Leon's voyage, was Grand Turk, the only island on these banks suitable for anchorage. Maps of later times now and then applied the name to one of the small islets lying south from Grand Turk. In early maps the modern Caicos group is easily recognizable by its quadruplet of islands lying in chain. Which one of this group was the Cayeòs of Ponce de Leon it would be somewhat rash to say, but the Ribero map and some others seem to attach the name more especially to the modern North Caicos. The next islands reached by the explorers, La Yagüna and Amaguayo, will be sought in vain in the more familiar Spanish maps of the time. These names went out of use among Spaniards very early. The Silviati map, however, seems to identify them as Mariguana and Plana Cays respectively. The next island, Maneguà, is easily traced. Even Freducci carries its name. It is modern Samana. The island Guanahani, made famous by Columbus, is identified with Watling Island by modern students of the Columbian voyages, and the evidence of early Spanish maps bears out the conclusion. Later maps sometimes transferred the name to Cat Island. The foregoing identifications show that Ponce de Leon skirted the eastern side of the Bahamas. From Watling Island he bore northwesterly, seeing Eleuthera or Great Abaco in the distance, rounded the Little Bahama Bank, and striking almost directly west into unknown waters, found the Florida coast.

<sup>3</sup> W. H. Tillinghast gives data on the cartography of Mouchoir Carré Bank in *Harv. Univ. Lib. Bibliog. Contrib.* No. 14.



Herrera says the landfall in Florida was at latitude  $30^{\circ} 8'$ . On turning back in Herrera's text it will be noted that El Viejo is given latitude  $22^{\circ} 30'$  and Guanahani latitude  $25^{\circ} 40'$ . The true latitudes of these islands are otherwise on modern charts, however. The center of Grand Turk is at  $21^{\circ} 28'$  and that of Watling at  $24^{\circ} 2'$ . Seemingly the record of latitudes made by Ponce de Leon gave him an excess reading of about one degree in latitude  $21^{\circ} 30'$  and an excess of about  $1^{\circ} 40'$  in latitude  $24^{\circ}$ . Assuming that his error increased toward the north in regular ratio,<sup>4</sup> it becomes possible to construct a tentative scale of corrected latitudes wherewith to check the ten statements of latitude that Herrera offers. By this scale Grand Turk assumes its true position at  $21^{\circ} 28'$ , Plana Cays take a tentative location of  $22^{\circ} 41'$  as against true latitude  $22^{\circ} 36'$ , Samana takes the tentative location of  $23^{\circ} 5'$ , which is also true latitude, Watling assumes its true position of  $24^{\circ} 2'$ , and the Florida landfall takes tentative latitude  $27^{\circ} 40'$ , a little north of Indian River Inlet. This must be approximately correct. The modern map shows that a vessel skirting Little Bahama Bank as did Ponce de Leon would reach the continent about here. The Freducci map, though showing no indicated latitudes, exhibits a coast which corresponds to that of the real Florida if the latter be terminated at about the latitude stated. The tentative scale, the implications of Herrera and the outlines of Freducci are in harmony on this point.

"And thinking that this land was an island they named it La Florida, because it had a very pretty view of many and cool woodlands, and it was level and uniform: and because, moreover, they discovered it in the time of the Flowery Festival [*Pascua Florida*] Juan Ponce wished to conform in the name with these two facts. He went on land to take information and possession. On Friday, the 8th, they made sail; they ran in the same direction, and Saturday they sailed to the south a quarter by southeast; and sailing by the same rhumb up to the 20th of April they discovered some huts of Indians, where they anchored. And the day following, all three vessels proceeding along the edge of the sea, they saw a current such that, although they had a great wind, they could not proceed forward, but backward, and it seemed that they were proceeding well; and in the end it was known that it was in such wise the current which was more powerful than the wind. The two vessels that found themselves nearest land anchored, but the current was so

<sup>4</sup> The journals of the Cabrillo-Ferrelo exploration of the Pacific Coast in 1542 show a parallel instance of stated latitudes in excess of true latitude, the excess element of which increased as the explorers moved from south to north. Prof. George Davidson tabulates an analysis of these latitude records in his *An Examination of the Early Voyages of Discovery and Exploration on the Northwest Coast of America*, from 1539 to 1603, Appendix No. 7 to the Report of the Superintendent of the Coast and Geodetic Survey for 1886, pages 244-247.

great that the cables went tight, and the third vessel, which was a brigantine, that found itself more to sea, must have not found bottom, or did not know of the current, and it drew it away from land, and they lost it from sight, the day being clear and with fair weather.

"Here Juan Ponce went on land, called by the Indians, who presently tried to take the boat, the oars, and the arms. And in order not to break with them it was permitted them, in order not to cause irritation in the region. But, because they struck a seaman in the head with a staff, from which he remained unconscious, it was necessary to fight with them, who, with their arrows and armed shafts—the points of sharpened bones and fish-spines—hit two Spaniards, and the Indians received little hurt. And the night separating them, Juan Ponce regathered the Spaniards with hard work. He set out from there to a stream where he took water and firewood, and stayed awaiting the brigantine. Sixty Indians repaired there to hinder it. One of them was taken for a pilot, and so that he might learn the language. He put on this stream the name of La Cruz, and he left by it one [*i.e. a cross*] hewn from stone, with an inscription. And they did not finish taking water, because of being brackish.

"On Sunday, the 8th of May, they doubled the cape of La Florida, which they named Cabo de Corrientes, because the water ran so much there that it had more force than the wind, and did not permit the vessels to go forward, although they put out all sails. They anchored behind a cape close to a village called Abaiða. All this coast, from Punta de Arracifes as far as this Cabo de Corrientes extends north and south a quarter by southeast, and it is quite clear and of depth of six fathoms; and the cape is in twenty-eight degrees and fifteen minutes."

Herrera seems to imply that the explorers moved northward from their landfall on April 2, and again on April 8. They could not have gone far in that time, and moreover the Freducei map gives no hint of their observing the outward trend of coast that culminates in Cape Canaveral. Turning their prows southerly they soon found Indian River Inlet, true latitude  $27^{\circ} 30'$ , which they marked on their chart as Rio de Canoas, River of Canoes.<sup>5</sup> As they moved onward they noted from time to time slight changes in coastal trend which they indicated by cape-like points on their charted coast line. The first of these was distinguished by an outlying shoal which may have been Capron Shoal. The second had no descriptive mark. The third, which they named Punta de Arracifes, Point of Reefs, was distinguished by a mass of outlying shoals. It was probably the

<sup>5</sup> The word "rio" as used by Spanish mariners was applied not only to running streams, but also to tidal inlets and to small coastal sounds.

locality of Gilbert Shoals. Somewhere about here seems to have been their anchorage of April 20 near Indian huts.

Still advancing they fell into that current which so roused their astonishment by forcing them to unintended anchorage. Apparently they were now a few miles north of Jupiter Inlet. Too near land to feel the Gulf Stream, they must have met the tidal current that sometimes attains considerable force at that part of the coast. While they waited for the current to abate they visited the aborigines with the results that Herrera tells. At the next inlet that invited them they entered to await the consort vessel's return. This place they called Rio de la Cruz, River of the Cross. The chart record of its cruciform shape identifies it beyond question as Jupiter Inlet, true latitude  $26^{\circ} 56'$ . No other inlet on the coast has the three branching streams at its head.

Still moving southward the explorers charted an inlet in position corresponding to the northern end of Lake Worth. Modern charts show a swamp at this point but no inlet. Possibly the swamp at high tide may have seemed an inlet: possibly an inlet really existed at the time. Soon the Spaniards rounded the point at Lake Worth Inlet in the face of another tidal flow and dropped anchor at an Indian town called Abaiòda by Herrera, Abacoa by Freducci. At Lake Worth Inlet there is a notable change in the trend of the peninsular coast line. The smooth convex curve of shore revealed by the modern atlas shows nothing that to-day would be called a cape, but to the old-time mariners, running by compass, the change of coastal trend was very noticeable and very important. Maps made before the days of official surveys indicate here an elbow of cape-like character. That Herrera indicates the locality at Lake Worth Inlet is shown by his reference to the trend of coast from Punta de Arracifes to this place. Freducci's coast line and his reference to Abacoa confirm the identity of the place. It is not clear, however, why Herrera's source should give the place the name Cabo de Corrientes, Cape of Currents, while Freducci's source should call it Cabo de Setos, Cape of Pales.

Herrera assigns to Cabo de Corrientes the stated latitude  $28^{\circ} 15'$ , a position which so nearly agrees with the true latitude of Cape Canaveral that it has caused the latter to be identified frequently with Cabo de Corrientes. The stated latitude corresponds to tentative latitude  $26^{\circ} 7'$ , but this harmonizes as little with the descriptive statements of the text as does Cape Canaveral. In this instance there is probably a textual error. The true latitude of Lake Worth Inlet is  $26^{\circ} 7'$ . Had Herrera said  $29^{\circ} 15'$  the correspond-

ing tentative latitude would be very close to the true latitude of the inlet.

"They sailed on until they found two islands to the south in twenty-seven degrees. To one that had a league of extent they put the name Santa Marta. They reached water in it. On Friday, the 13th of May, they made sail, running along the coast of a sand-bank and reef of islands as far as the vicinity of an island that they named Pola, which is in twenty-six and one-half degrees, and between the shoal and the reef of islands, and the mainland extends to the open sea in the form of a bay. On Sunday, the day of the Festival of the Holy Spirit, the 15th of May, they ran along the coast of rocky islets ten leagues, as far as two white rocky islets. And to all this line of islands and rocky islets they put as a name Los Martires because, seen from a distance, the rocks as they raised to view appeared like men that were suffering. And the name has fitted, moreover, because of the many that in them have been lost since. They are in twenty-six degrees and fifteen minutes."

From Lake Worth Inlet continuing southward the explorers passed Hillsboro Inlet and New River Inlet, both of which they marked on their chart and the latter of which they seem to have entered, for it was named by them Rio Salado, Salty River. Farther on they found a place called Chequeschà, as Herrera has it, or Chequiche, as says Freducci. The northward pointing bay indicated by Freducci seems to identify this place with the bay at modern Miami. Advancing to stated latitude  $27^{\circ}$ , corresponding to tentative latitude  $25^{\circ} 7'$ , they stopped for water at an island a league in extent, apparently modern Key Largo, which they named Santa Marta.

Their next anchorage as they ran along the Keys was the island Santa Pola, or Santa Paula, whose stated latitude of  $26^{\circ} 30'$  corresponds to tentative latitude  $24^{\circ} 42'$ . The text seems to imply also that this island lay about ten leagues from the extremity of the Keys. Apparently the locality indicated is about where Moser Channel crosses the line of keys in true latitude  $24^{\circ} 40'$ . Herrera's reference to the mainland is nevertheless puzzling. It is possible that the mass of islands here seemed to the explorers like a part of the Florida mainland and that Herrera's description is meant to fit some one of the larger keys, such, for example, as Big Piney Key. An alternative is to suppose that Herrera's abridgment has obscured a reference to a hasty reconnaissance of Barnes Sound by way of the Moser Channel. The basis for this idea is the appearance in Freducci's map of the name Canbei lying along the north side of the Keys and the name El Nirda lying along the islands that skirt the Florida mainland at Barnes Sound.

The next anchorage seems to have been at or near the extremity of the line of the Keys, at an island named Achecambei. It may have been Key West, for Herrera's stated latitude  $26^{\circ} 15'$  corresponds to tentative latitude  $24^{\circ} 30'$ , and Key West lies in true latitude  $24^{\circ} 33'$ . The name Los Martires which Ponce de Leon applied to the Keys appears on the Freduecci map. From the extremity of the Keys the explorers moved westward far enough to reconnoiter the Tortugas group and then swung their course northerly in deep water.

"They continued sailing, sometimes to the north and other times to northeast, until the 23rd of May, and on the 24th they ran along the coast to the south (not going forth to see that it was mainland) as far as some islets that extended outward in the sea. And because it appeared that there was an entrance between them and the coast for the vessels, in order to take water and firewood they were there until the 3rd of June, and careened one vessel that was called the San Christoval. And at this time Indians in canoes repaired there to reconnoiter the Spaniards the first time. Seeing that although the Indians called them the Spaniards did not go on land, wishing to raise an anchor in order to repair it, they thought that they were going away. They put to sea in their canoes and laid hold of the cable to carry away the vessel; for which the bark went after them and, going upon the land, they took four women and broke up two old canoes. The other times that they repaired there they did not come to a rupture, because they saw no preparations before they traded skins and pieces of guanin.

"On Friday, the 4th, while awaiting wind for going in search of the chief Carlos, as the Indians of the vessels said that he had gold, a canoe came to the boats; and an Indian who understood the Spaniards, who, it was believed, must be from Española or from another island of those inhabited by Spaniards, said that they should wait, as the chief wished to send gold in order to trade. And while waiting there appeared at least twenty canoes, and some fastened together by twos. Some went to the anchors, others to the vessels, and began to fight from their canoes. And not being able to raise the anchors they wished to cut the cables. An armed bark went to them and made them flee and abandon some canoes. They took five and killed some Indians and four were captured. Two of them Juan Ponce sent to the chief in order that they should tell him that notwithstanding they had killed a Spaniard with two arrow wounds he would make peace with him.

"The following day the bark went to sound a harbor that was there, and the party went on land. Indians repaired there who said that next day the chief would go to trade (but it was deceit). Meanwhile the people and canoes came near, and so it was that on the 11th eighty men behind waist-cloths went upon the vessel that was nearest. They fought from the morning until the night with-

out hurt to the Spaniards, because the arrows did not reach, whilst for the cross-bows and artillery shots they dared not draw near, and in the end the Indians retired. And the Spaniards, after having stayed nine days, on Tuesday, the 14th, resolved to return to Española and to San Juan, with the intention of exploring on the way some islands of which the Indians that they carried gave information. They returned to the island, where they took water, which was named Matança, from the Indians that they killed."

From the Tortugas the Spaniards worked uncertainly toward the northeast until they again saw land. Apparently this landfall revealed no harbor, but a day's run to the southward brought them to the islands at Cape Romano, where they found a refuge. Here occurred the battle with Indians for which they named the place Matança, The Killing. The identity of Matança with Cape Romano is fixed by Freducei, whose inaccurate legend Yglias de Maranca is applied to projecting islands backed by small islets and by a coast line whose trend in either direction resembles that in the modern map. The explorers' landfall, located north of Cape Romano a day's run of eight or ten Spanish leagues yet not far enough north to reveal a harbor, must have been near latitude  $26^{\circ} 20'$ .

From Cape Romano the explorers removed to another harbor and stayed in it nine days. Its location is not indicated by Herrera. On Freducei's map there appears near the northern extremity of his Florida coast line the names Guchi and Stababa in the relative positions of San Carlos Bay and Ostego Bay. Stababa seems to be an abbreviated form of Santa Barbara, patroness of mariners endangered by storm. Of the name Guchi no explanation is at hand. Herrera's text makes it improbable that these places could have been noticed at the time of the landfall. It is not unreasonable therefore to suppose that the Spaniards, on leaving Cape Romano, moved northward and found harbor at the points indicated, perhaps seeking refuge from storm. This supposition is strengthened by the fact that it would have been difficult, if not impossible, for the larger vessels to have found harbor on the shoal-girdled coast lying southward from Cape Romano. San Carlos Bay and Ostego Bay lie at the southern extremity of the line of islands that guards the entrance to Charlotte Harbor, but neither Herrera nor Freducei give any hint that the Spaniards knew of this latter harbor's existence. From their second anchorage, wherever it may have been, the explorers returned to Cape Romano for water and then struck out for the Tortugas, homeward bound.

"On Wednesday they went on the lookout for the eleven rocky



islets that they left at the west. On Thursday and Friday they ran in the same direction until, on Tuesday, the 21st, they reached the rocky islets, which they named *Las Tortugas*, because in one short time in the night they took, in one of these islands, one hundred and sixty tortoises, and might have taken many more if they had wished. And also they took fourteen seals, and there were killed many pelicans and other birds that amounted to five thousand.

"On Friday, the 24th, they ran to the southwest a quarter west. On Sunday they saw land. On Monday they proceeded along the extent of it in order to examine it, and on Wednesday they took harbor in it and dressed the yards and sails, although they were unable to learn what land it was. The greater part considered it as Cuba, because they found canoes, dogs, cuttings from knives and from iron tools; and not because anyone knew that it was Cuba, but by the argument that to Cuba they had that course, and that it ran east and west like it, except that they found themselves eighteen long leagues off the route for it being Cuba.

"On Friday they went from here in search of *Los Martires*. On Sunday they reached the island of *Achecambei*, and passing by *Santa Pola* and *Santa Marta*, they reached *Chequeschà*."

Running from Cape Romano the Spaniards sighted and stopped at the island group that to this day preserves the memory of Ponce de Leon's big catch of turtles. Herrera must surely have blundered, however, if he meant to report a catch of five thousand birds. Running from the *Tortugas* southerly they reached, as they rightly guessed, the Cuban coast, somewhere near its western end. From thence they guided themselves back to the Florida Keys and retraced their former route along them, noting, as they passed, their former anchorages at the islands that Herrera mentions. At *Chequeschà*, probably the harbor at modern Miami, in true latitude  $25^{\circ} 50'$ , they seem to have stopped. Herrera does not say that they crossed the Bahama Channel from this place, but as his next described point is a Bahama islet identifiable with true latitude  $25^{\circ} 45'$ , it would seem certain that *Chequeschà* was made their point of departure from the Florida coast.

"They sailed as far as some islets that are in the banks of the *Lucayos* more to the west, and anchored in them on the 18th of July, where they made supply of water. And they put on them the name *La Vieja*, from an old Indian woman, without any other person, that they found. And they were in twenty-eight degrees.

"In the beginning there could not be learned by the discoverers the name that *La Florida* had, seemingly, because, seeing that that point of land projected so much they considered it as an island, and the Indians, as it was mainland, told the name of each province, and the Spaniards thought that they were deceiving them;

but in the end, because of their importunities the Indians said that it was called Cautiò, a name that the Lucayos Indians put upon that land because the people of it carried their private parts covered with palm-leaves woven in the form of a plait.

"On the 25th of July they went from the islets on the lookout for Bimini, sailing among islands that seemed water-swept. And, being done, not knowing by what way to go on with the vessels, Juan Ponce sent the bark to examine an island that he considered as water-swept and found to be that of Bahàma. And thus said the old woman that they carried, and Diego Miruelo, the pilot, whom they met with a bark from Española that was going at its own risk, although others say that by luck they had made port there. They went Saturday, the 6th of August, by the route they had been going, and until finding the deeps they ran to the north-west a quarter west as far as an islet of rocks alone at the edge of the deep. They changed course. They ran by the edge of the bank to the south. They changed this course next day, although Bimini was not in that direction. And for fear of the currents that another time were driving the vessels to the coast of La Florida or Cautiò (as then they were calling it) they took up their return movement for the island of San Juan de Puerto Rico."

On leaving Chequeschà the explorers apparently crossed the Bahama Channel easterly in quest of Bimini, the region granted to Ponce de Leon by royal patent, and for the occupation of which his present expedition had been taken forth. It was supposed by them that Bimini lay somewhere in the western part of the Bahama archipelago. Almost directly across the water from Chequeschà lay two islets marking the edge of the Great Bahama Bank. Herrera's stated latitude of  $28^{\circ}$ , corresponding to tentative latitude  $25^{\circ} 56'$ , identifies La Vieja, Old Woman, as modern North Bimini, in true latitude  $25^{\circ} 44'-47'$ . Its surface, rising forty feet above the ocean, is still a mariner's sea-mark and on occasion a source of water supply. Its modern name of Bimini was attached to it long after the time of Ponce de Leon, however. It is not the Bimini that he was seeking.

From North Bimini the Spaniards apparently moved northerly and somewhat easterly across the outer part of the Great Bahama Bank, noting on their way the tide-swept bars and islets that abound there. Soon they found a large island that they learned to call Bahama. The Bahama of the earlier maps identifies it with the modern island of the name. In their examination of this island they must have discovered the deeper water of the Northwest Providence Channel, for they seem to have followed its course westerly, reaching the lone islet now known as Great Isaac, in true

latitude 26° 2'. From this islet they turned to follow the edge of the Bahama Bank southerly again. At this point Herrera's abridgment becomes most unsatisfactory. How far south they went he does not state. It may be that they ran back to La Vieja for water and wood, but Herrera does not say so. It is clear only that they found the tidal current difficult to cope with, and that, abandoning further effort to cross the banks easterly, they headed northward to skirt the Little Bahama Bank by the route they had used on the outward voyage.

"And having sailed until the 18th of August they found themselves at daybreak two leagues from an island of the Lucayos, and they ran three leagues, as far as the point of this island, where on the 19th they anchored and stayed until the 22nd. From here they were retarded four days in arriving at Guaninà, because wind and passage failed them. And they fled back from its coast to the island of Guatào; and by the storms they were kept occupied in it without being able to go from it twenty-seven days, until the 23rd of September. And the bark from the island of Española that had joined itself with them was lost there, although the people were saved.

"Having dressed the vessels, it appearing to Juan Ponce that he had toiled much, he resolved, although against his wish, to send one to examine the island of Bimini; for he wished to do it himself, because of the account that he had of the wealth of this island, and especially of that particular spring, as the Indians said, that restores men from old ones to youths, the which he had not been able to find, by reason of banks and currents and contrary weather. He sent then, as captain of the vessel, Juan Perez de Ortubia, and as pilot, Anton de Alaminos. They carried two Indians for pilots of the banks, because they are so many that with much peril can one proceed because of them.

"And this vessel departed on the 17th of September, and Juan Ponce next day for his voyage. And in twenty-one days he arrived within recognition of San Juan and went to take harbor in the bay of Puerto Rico, where, after having found Bimini although not the spring, the other vessel arrived with an account that it was a large island, cool, and with many water places and woodlands. And discovery by Juan Ponce in La Florida had this ending, without knowledge that it was mainland; nor for some years afterwards was assurance of it had."

Herrera, having left the explorers in the Bahama Channel, next reveals them near the extremity of Guatào island, which the older maps show, by the location and contours assigned to it, to be modern Eleuthera. The name Guatào is called Ciguatao in the earlier maps and corrupted to varying spellings by later copyists. After

some efforts the explorers crossed over to Guanimah, modern Cat Island, but were forced to run back to Eleuthera to get proper refuge from storm. When the storms had passed Ponce de Leon detailed the light-draught vessel to continue the search for Bimini. He himself sailed homeward to Porto Rico, presumably retracing his outward route from Watling Island to Grand Turk and from thence to the harbor of San Juan.

Anton de Alaminos, the responsible officer of the smaller vessel, picked his way into the Bahamas from the eastward and at about the location where Bimini was supposed to be he found Habacoa, modern Andros Island, the water places and woodlands of which were satisfactory, but which offered no spring of recurrent youth. This great island was Bimini, decided Alaminos, and he prepared to bear the tidings to Ponce de Leon at Porto Rico. Before he departed, however, remembering his duties as Ponce de Leon's deputy, he seems to have parleyed with the natives in a sort of formal treaty. Of this the evidence is a passage in the royal *cedula* of July 22, 1517, issued by Charles and Juana to restrain slave trade:

"Juan Ponce de Leon made report to us that he went to explore by command of the catholic king, our lord, father, and grandfather—may he have saintly glory—the islands of Bimini and the island Florida, and that in fulfillment of certain articles that were agreed upon with him he explored the said islands and many others, and left the chiefs and Indians of the said island of Bimini peaceful; and he assured them on Our part, promising them that they would not have any evil through the said Juan Ponce, nor through any other persons, and that they would not be removed from there to carry them to the said island Española like the Lucayans, since it is what they most fear; and the said chiefs and Indians remained very glad and said that they would have production of bread and other things for us, and that they would serve in what might be commanded them, . . . . ."<sup>6</sup>

With the story of discovery ended, that of cartography begins. The charts of Ponce de Leon and of Alaminos went in due time to Spain, doubtless to the government repositories where they could furnish information to the Spanish officials and pilots. From them sprang two prototypes that for many years guided representation of the western Bahamas. One of these prototypes showed Habacoa, modern Andros Island, of proper size and location, surrounded by the Great Bahama bank, and with no large island between it and Florida. Of this type is the Silviati map, made about 1525, being

<sup>6</sup>The *cedula* will be found in Colec. Doc. Inéditos, XI: 295.

one of the earliest maps of the region where Ponce de Leon went. The other prototype showed Habacoa, properly indicated and located, but by some blunder there was placed close to it at the west another island, half its size, bearing the name Bimini. Of this type was the Freducei map and some others.

This doubling of Habacoa-Bimini met with the favor of many map-makers as they copied and recopied their material year after year. There came a time, however, when the cartographic myth of Bimini fell under suspicion. In the seventeenth century French and Dutch buccaneers haunted the West Indies and the region of the Bahamas became better charted than formerly. Sometimes the island Bimini was left out entirely by map-makers: sometimes it was disintegrated into a group of islets lying within the Bahama bank and keeping the name Bimini: sometimes the name was shifted to a little island group, well known to mariners, that lay on the western edge of the Bahama bank. This little group was the same that Ponce de Leon had visited and named *La Vieja*. De Lisle, the French geographer, is one of the earlier ones who thus attached the name Bimini to a real islet. His atlas of 1733 shows it so indicated. He seems not to have been the first to do so, however. Others before him and after him found it convenient to thus dispose of the orphan name, and so to-day it rests where Ponce de Leon rested in his search for the real Bimini.

## GEOGRAPHICAL INFLUENCES IN THE DEVELOPMENT OF WISCONSIN \*

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### CHAPTER V. THE LUMBER INDUSTRY

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If a line were drawn from Manitowoc to Portage and from there to the falls of the St. Croix, nearly all the forest region proper of the state would be north and the prairies and oak openings south of it (Fig. 13, in Chap. III, p. 596). The forested area has been divided according to the vegetation it supports into four more or less distinct regions. (1) A hardwood region which occupies a 35- to 50-mile wide belt around the southern edge. This belt contained originally some pine trees, usually of large size and forming

\* Continued from pp. 401-412, 490-499, 585-600, and 653-663.



about 5 per cent. of the stand of timber. (2) Extending north somewhat indefinitely from the hardwood belt is the mixed hardwood and pine growth in which 50 per cent. of the stand was hardwood, chiefly birch, and the rest was pine and other conifers. (3) There were many open spaces in this area of mixed hardwood and conifers, which were covered by grass or cranberry marshes. Together with the lakes and streams these spaces formed about 5 per cent. of the so-called forested area. (4) Areas of heavy pine timber occurred along the Wisconsin River, about the headwaters of the Flambeau and Wisconsin, in Marinette and Oconto Counties, and in other scattered localities. In the whole forested area the pine constituted on the average about 30 per cent. of the tree growth.<sup>1</sup> In general the mixed forest of white pine and hardwoods occurred on all loam and clay soils. The sandy loam and red clays of the Lake Superior region supported chiefly pine, while the sandy and loamy sand districts were covered with pine only, usually a mixture of white and Norway.<sup>2</sup> The poorest soil constituted the "barrens" and supported a tree growth of scrub pines and hardwoods, usually oaks. Good timber grows on good soils and this grades into inferior timber on poorer soils. (5) Outside of the forest area proper, in the southern part of the state, are bodies of timber which are mostly hardwood, but they have been of no great commercial importance. They have been used almost exclusively by the population of the thickly settled area within which they occur.<sup>3</sup>

Of the 38 species of forest trees in Wisconsin,<sup>4</sup> the white pine has been the most valuable commercially. The quality of Wisconsin pine varied greatly, depending upon the kind and condition of the soil. That growing in the hardwood belt was of good quality, especially along the Wolf, Oconto, and Peshtigo Rivers. The Black River district and also the Eau de Galle River basin in the counties of Pierce, Dunn, and St. Croix, contained a large amount of high grade pine. There were about one to ten trees an acre scattered among the hardwoods, each tree scaling from 1,000 to 3,500 feet of lumber.<sup>5</sup> Much good pine occurred in the area of mixed hardwoods and conifers, particularly along the Wolf River. As much as 10 million to 12 million feet of pine have been cut from a

<sup>1</sup> Roth, F.: Forestry Conditions of Northern Wisconsin, *Wis. Geol. Surv. Bull.* 1, p. 14.

<sup>2</sup> *Ibid.*, p. 10.

<sup>3</sup> 10th Census of U. S., Vol. IX, p. 557.

<sup>4</sup> DeFebaugh, J. E.: History of Lumbering in America, p. 304.

<sup>5</sup> 10th Census of U. S., Vol. IX, p. 555.

640 acre section along the lower Wolf.<sup>6</sup> Along the Eau Claire River the timber was of small diameter and sound, growing very thick and high. It is reported that as much as 1.2 million to 1.5 million feet have been cut upon a 40 acre lot in this region. One tree on the Jump River is said to have scaled 7,000 feet of lumber.<sup>7</sup> Along the St. Croix where the soil is sandy, the timber is scrub pine and dwarf black and white oak. This constitutes part of the area known as the "barrens" (Fig. 13, in Chap. III, p. 596).

The effect of soil is just as apparent in the growth of the hardwoods as in that of the pines. The hardwood area of Dunn, Pierce, Clark, Wood, and Marathon Counties extended east to Green Bay and in a narrowing belt along Lake Michigan. This area contained some high grade white oak, suitable for manufacturing purposes.<sup>7</sup>

Lumbering in Wisconsin began in 1809 with the building of the first sawmill on the Devil River,<sup>8</sup> just east of Depere. The next mill of which there is record was erected at Kaukauna in 1816, to supply lumber for the fort at Green Bay. Government permits were given to erect mills on the Menomonic at the present site of Menomonie in 1829;<sup>9</sup> at the present site of Plover on the Wisconsin in 1831;<sup>10</sup> on Doty's Island in Lake Winnebago in 1831;<sup>11</sup> at Little Chute on the west side of the Fox River in 1832;<sup>12</sup> and on the west side of Green Bay, twenty miles from Fort Howard, in 1833.<sup>13</sup> In 1849 a traveler reported 47 mills along the Wisconsin River and from 1,500 to 2,000 men engaged in rafting logs and lumber.<sup>14</sup>

It is possible that lumber was shipped from the west side of Lake Michigan to Chicago as early as 1835. At any rate the lumber trade from Wisconsin began to assume considerable proportions by 1839, and by 1845 Wisconsin lumber was competing with Michigan lumber in Chicago.<sup>15</sup> The lumber industry developed not only along Lake Michigan but also in the interior along the Wolf, Wisconsin, Black, Chippewa, and other rivers. The strong demand for lumber on the part of the growing settlements in Wisconsin and the states farther south caused the occupation of most of the available mill sites. Around these mills settlements sprang up, many of

<sup>6</sup> 10th Census of U. S., Vol. IX, p. 556.

<sup>7</sup> *Ibid.*, p. 557.

<sup>8</sup> *Wis. Pion. Repts.*, Vol. 3, p. 253.

<sup>9</sup> *Wis. Hist. Coll.*, Vol. II, p. 133.

<sup>10</sup> *Ibid.*, Vol. XV, p. 9.

<sup>11</sup> *Ibid.*, Vol. XV, p. 14.

<sup>12</sup> *Ibid.*, Vol. XV, p. 11.

<sup>13</sup> *Ibid.*, Vol. XV, p. 16.

<sup>14</sup> Chapin, John E.: *Sketch of Cutting Marsh*, *Wis. Hist. Coll.*, Vol. XV, p. 336.

<sup>15</sup> Hotchkiss, G. W.: *Industrial Chicago*, Vol. V, pp. 21, 31, 39.

which grew to be large and prosperous cities, as noted in the preceding chapter.

The method of lumbering varied on the different rivers. Since the nature of its channel rendered the driving of logs very difficult, practically all the logs along the Wisconsin were sawed at the river bank. Above Grand Rapids, which is located at the edge of the crystalline area, the Wisconsin is a succession of rapids and eddies. Through these the lumber had to pass. It was built into cribs 16 x 16 or 16 x 12 feet, containing 12 to 20 tiers of inch boards. These cribs were bound together by pins, 2 inches in thickness and 4 feet long, made of saplings with a part of the root left on to form the head of the pin. The pins were put through the planks forming the bottom of the crib, the lumber was piled on, and the pins fastened into the binding planks at the top.<sup>16</sup> About six of these cribs were fastened end to end to form a "rapid piece." A solid piece of square timber was fastened across each end and on this were hung the 36-foot oars. Two to eight men were necessary to handle a "rapid piece." A fleet consisted of 15 or more rapid pieces, managed by one pilot and his assistants. When a rapid or fall had to be crossed the fleet was tied in smooth water above and the crew took the "rapid pieces" over one by one. Below Grand Rapids two "rapid pieces" coupled side by side formed a "Wisconsin raft" with which the river men ran The Dells. Below The Dells several rafts were united, but not until the Mississippi was reached was the whole fleet united into one great raft 500 to 1,000 feet long, and 200 to 300 feet wide. Upon this cabins and cook houses were erected and the hands were able to get regular meals and sleep.<sup>17</sup> The first large raft reported to have been taken down the Wisconsin went from Portage to St. Louis in 1839.<sup>18</sup>

On the Black River most of the logs were run in rafts to La Crosse at the mouth, and such as were not sawed there were floated down the Mississippi to points in Iowa, Illinois, and Missouri.<sup>18</sup> The fact that there was little sawing done on Black River made Black River Falls for many years the only place on the river of much importance. Even the lumbermen who lived at the Falls preferred to run their logs to La Crosse to be sawed.

Logging began on the Chippewa as early as 1822.<sup>19</sup> There was

<sup>16</sup> Ellis, A. G.: *Upper Wisconsin Country, Wis. Hist. Coll.*, Vol. III, p. 441.

<sup>17</sup> *Ibid.*, pp. 442-443.

<sup>18</sup> Holley, J. M.: *Waterways and Lumber Interests of Western Wisconsin, Wis. St. Hist. Soc. Proc.*, 1906, p. 210.

<sup>19</sup> Thwaites, R. G.: *Wisconsin*, p. 282.

little done until after 1836, however, and even then sawing was carried on in a comparatively small way until 1850. After that the cut increased steadily until 1883 (Fig. 22). In 1880, 5,000 men were employed in the pineries along the Chippewa, cutting about 600,000,000 feet of logs.<sup>20</sup>

In 1836 lumbering began along the St. Croix. A company was formed in 1838 which shipped nothing but sawed lumber, lath, and shingles until 1843. In that year a flood swept away their logs,

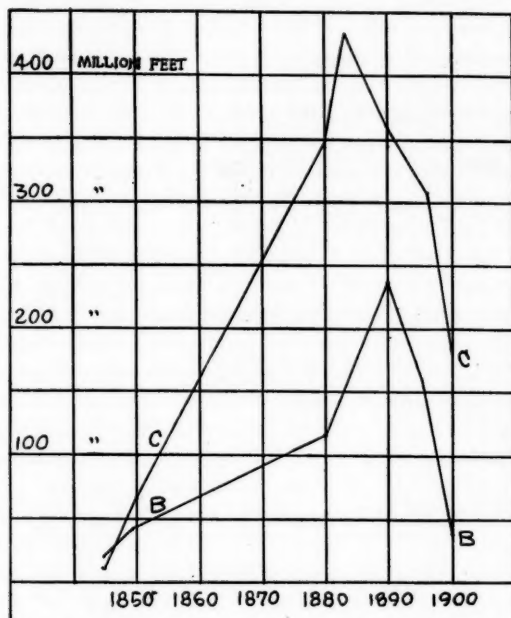


FIG. 22—Lumber Cut in the Valleys of the Black (B) and Chippewa (C) Rivers.

which were collected into rafts again at Stillwater and run to St. Louis from that point. This proved so profitable that running uncut logs to market became an important part of the business.<sup>21</sup> In the beginning, the propelling power of the log rafts on the Mississippi was the current of the river. In 1864 the experiment of towing a raft with a steamer proved successful and created an epoch in river rafting. After a time a small steamer was placed at

<sup>20</sup> 10th Census of U. S., Vol. IX, p. 557.

<sup>21</sup> Holly, J. M.: Waterways and Lumber Interests of Western Wisconsin, *Wis. State Hist. Soc. Proc.*, 1906, p. 212.

the bow of the raft at right angles to the current and helped to guide the logs. At one time more than 100 steamers were employed in this work.<sup>22</sup>

The lumber industry acquired great prominence in the state about 1870. After this the output increased rapidly to 1892, which was the year of greatest production, with 4.1 billion feet (Fig. 23). In 1880 Wisconsin occupied third place among the lumbering states, being outranked only by Pennsylvania and Michigan. In 1890 it

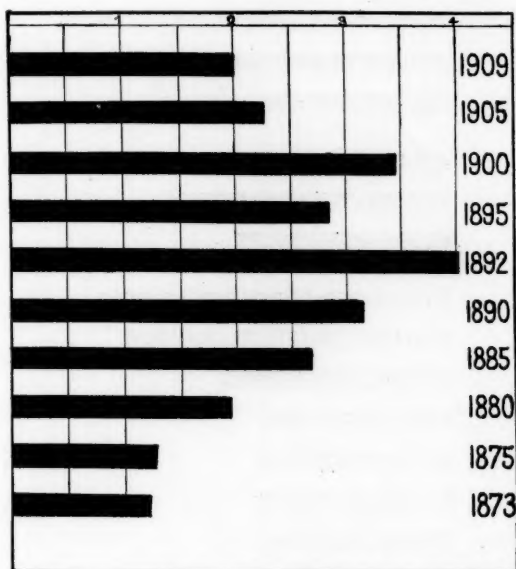


FIG. 23.—Lumber Cut in Wisconsin from 1873 to 1907 in Billion Feet (Wis. Geol. Surv. Bull. No. 1, p. 38, and Census Reports).

ranked second and in 1900 first, although the actual output of lumber was not so great in the latter year as in 1892. Since 1900, Wisconsin's rank has declined steadily, being third in 1905 and eighth in 1909 (Fig. 24).

Extensive lumbering was carried on first along the south-flowing rivers. In 1848 the lumber cut on the Wisconsin River amounted to 19½ million feet. The cut rose to 43½ million feet in 1851, to 70 in 1853, and to 149 million feet in 1857. When the railroads

<sup>22</sup> Holly, J. M.: Waterways and Lumber Interests of Western Wisconsin, *Wis. State Hist. Soc. Proc.*, 1906, p. 214.

came into use in lumbering the cut of the Wisconsin and its tributaries was distributed in various directions, and records are not available for the later history of this area as a unit. The records for the Black and Chippewa Rivers are more complete. The cut of lumber on the Black River in 1848 was 12½ million feet; it reached its highest mark in 1890 with 243.2 million feet, and dropped to 40 million feet in 1900 (Fig. 22). The cut of lumber in the Chip-

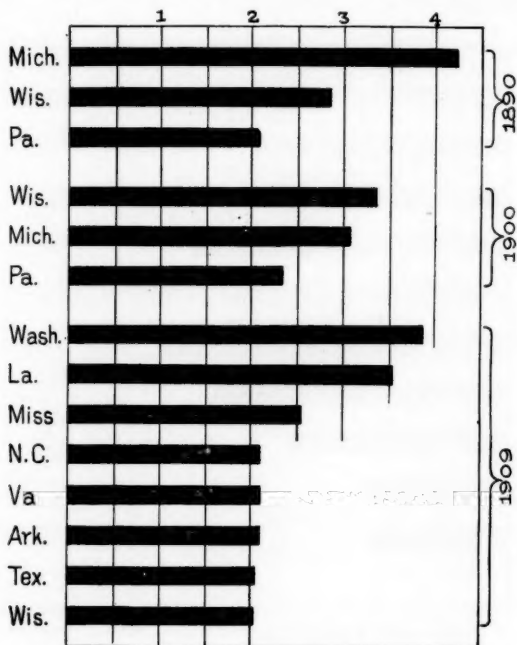


FIG. 24—Production of Lumber by States (in Billions of Board Feet).

pewa valley was 11.35 million feet in 1848, reached a maximum of 428 million in 1883, and was only 176 million in 1900.

The Lake Superior forests were not exhausted so early as those farther south because operations were not begun so soon. The Ashland district reached its maximum of 507 million feet in 1899.<sup>23</sup> The Duluth district, which is only partly in Wisconsin, had its greatest cut of 731 million feet the same year. It is probable that a graph representing the cut in the Lake Superior area would re-

<sup>23</sup> Monthly Summary of Commerce and Finance, January, 1901.



flect the same history of development and decline as does that for the Black and Chippewa areas. The statistics for such a graph are, however, not at hand.

The cutting of pine in the Wisconsin forests went on with amazing rapidity, particularly after the railroad enabled the lumbermen to transport logs at any time of the year, and rendered them inde-

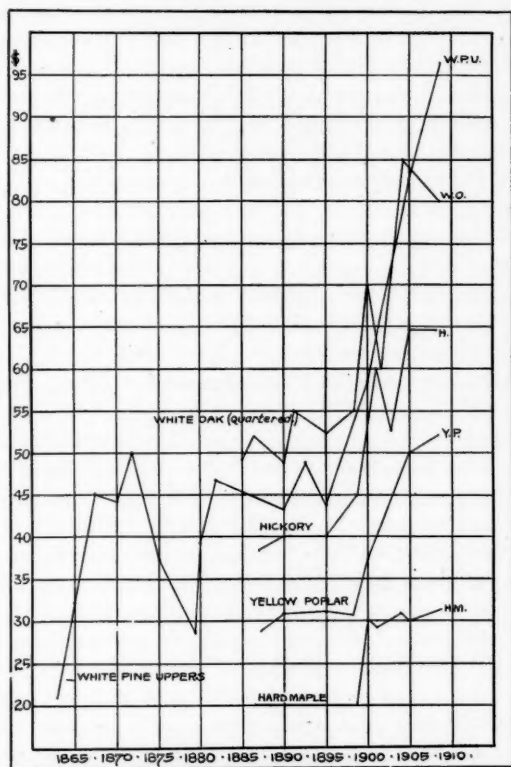


FIG. 25.—Comparative Prices of Lumber per Thousand Feet in Buffalo.

pendent of the stage of water in the rivers. When the industry was at its height in the Lake Superior region there was scarcely a township in the whole forested area that had not been logged over. It is stated that a certain tract of 1,000,000 or more acres belonging to the Wisconsin Central Railway was logged over three times at intervals of a few years. The first man was supposed to have taken all the pine that was of value, and he made a good profit. So did

the second man, and the third man is said to have cleared just as much money as the first, due to the increased value of the pine.<sup>24</sup> Areas that were logged first for white pine only, were later cut over for Norway pine and perhaps a third time for hemlock.

The amount of lumber, chiefly pine, cut from the forests of Wisconsin was estimated by F. Roth in 1898, for the Geological and Natural History Survey of Wisconsin, to have been 86 billion feet. The amount of standing timber fit for sawing was then 29 billion feet, conifers, and 16 billion feet, hardwoods. Roth also estimated the original stand of pine at 129.4 billion feet, of which 17 billion feet still remained in 1898 and 26 billion had been wasted, chiefly by fire.<sup>25</sup>

The price of lumber has increased with the growing scarcity and the increase in consumption. White pine uppers, which could be bought in Buffalo for \$21 a thousand in 1863, were worth \$50 in 1873. The price dropped to \$28 in 1878, but in 1895 had advanced to \$43. Since that date the price has risen steadily, until in 1908 the same grade of pine was worth \$97. Quartered white oak, which was worth \$52 a thousand in 1887, was worth \$80 in 1906. The same year hickory brought \$65 a thousand, yellow poplar \$53.50 and maple \$32.50 (Fig. 25).

The lumber industry has had a tremendous effect on the life and history of Wisconsin. For years it was the dominating industry, representing in 1890 one-sixth of the total taxable property of the state.<sup>26</sup> It encouraged the introduction of secondary industries, invited immigration and the rapid development of the forested area; brought about an early and wasteful exploitation of the timber resources; reduced large areas to an almost desert condition; disturbed the flow of streams; caused the drying out of many swamps; and permitted soil wash in the deforested areas. The state now faces a timber famine. The lumber industry has brought an immense amount of wealth to the state. In 1850 the timber products were worth \$1,250,000; in 1880 they reached their highest value of almost \$61,000,000; in 1905 they amounted to \$44,000,000,<sup>27</sup> and in 1909 to \$33,210,079.<sup>28</sup>

The lumber industry caused the establishment of many secondary industries which depend on forest products for their raw materials. This influence is seen in the furniture factories, carriage

<sup>24</sup> Wisconsin in Three Centuries, Vol. II, p. 54.

<sup>25</sup> Roth, F.: Forest Conditions in Northern Wisconsin, *Wis. Geol. Surv. Bull.* 1, p. 16.

<sup>26</sup> *Ibid.*, p. 55.

<sup>27</sup> *U. S. Census Bull.* 77.

<sup>28</sup> Graves, H. S.: Forest Products of United States, 1909.

factories, paper and pulp mills, planing mills, and tanneries located within the state. In 1890 the lumber industry gave employment to 55,000 men,<sup>29</sup> a large percentage of whom were settlers who managed in this way to support themselves until their growing clearings should furnish a sufficient income. The taxes on the timberland built the common roads through the new country. They built, equipped, and partly maintained common schools, which gave the children of these regions educational advantages as good as those enjoyed in many much older districts. Owing to the severe competition between companies a concentration of milling resulted which presently deprived the counties in which the logs were cut of much of the benefit which otherwise would have been theirs, and gave it to the cities at the mouths of the rivers, such as Ashland, Washburn, Bayfield, and Superior.

The effect of the lumbering industry on population is shown in the fluctuation of the population of the great sawmill cities (Fig. 20, in Chap. III, p. 607), which grew with wonderful rapidity until the culmination of the industry in their vicinity, and then in some cases actually decreased. The counties in the lumbering region had their greatest growth during the period of the greatest activity of the lumber business within their limits. Ashland County increased 1,186 per cent. between 1880 and 1890; 2.8 per cent. between 1900 and 1905. Bayfield County increased 1,184 per cent. between 1880 and 1890, 94.4 per cent. between 1890 and 1900, and 10 per cent. between 1900 and 1905. Eau Claire County increased 240.5 per cent. from 1860 to 1870, 85.5 per cent. from 1870 to 1880, and 3.3 per cent. from 1890 to 1900. Dunn County increased 77.3 per cent. from 1870 to 1880, 34 per cent. from 1880 to 1890, and 4.1 per cent. from 1900 to 1905.

The removal of the timber gave an opportunity for agricultural development. More than 1,000,000 acres of forest land had been cleared and put under cultivation in 1898.<sup>30</sup> In 1905 there were about 2,000,000 acres of improved land in the seventeen forested counties of Wisconsin.

The method of conducting lumbering operations resulted in great loss to the state in several ways. (1) While the large modern sawmill utilizes nearly everything for which there is a market, the older mills and the smaller ones of the present day destroy a great amount of valuable material in the slab piles and burners. The modern band saw cuts with half the kerf of the old "muley" saw.

<sup>29</sup> Roth, F.: Forest Conditions in Northern Wisconsin, *Wis. Geol. Surv. Bull.* 1, p. 40.

<sup>30</sup> *Ibid.*, p. 12.

Had it been applied to all the white pine sawed in Wisconsin from 1872 to 1905 it is estimated that it would have increased the cut nearly 1,000,000,000 feet.<sup>31</sup>

(2) A much greater waste occurs in the logging operations. (a) The stumps formerly were cut high with axes, instead of low with saws. This alone made a difference of several feet of lumber to each full grown tree cut. (b) The logging crew seldom cut the tree to the best advantage. It was a common thing to take two 16-foot logs out of a 40-foot clear trunk and waste the 8 feet at the top, instead of cutting one 16-foot log and two 12-foot logs. (c) Hemlock is useful for lumber and pulp wood and its bark for tanning purposes. Instead of saving the top of a hemlock tree for pulp wood and bark, it is often left in the woods as slash to feed forest fires. Hemlock should also be cut only in the spring when the bark peels readily, otherwise the peeling at the pulp mill results in a loss of 15 to 20 per cent. of wood.<sup>32</sup> (d) Logs and skids are left in the woods to rot, instead of being cut into lumber. (e) Many windfalls and old trees that have started to decay might be utilized, but usually they are not. (f) Young growth is cut for making a bedding for sleigh roads, and for car stakes. (g) Young timber is broken in felling large trees and in hauling logs to the roadways. This young growth represents a small loss in merchantable timber but a large loss when it is considered how long it has taken to produce that growth.

(3) The greatest loss to the lumbering industry of the state is the wholesale destruction of the forests by fire. It is estimated that of the once magnificent forests of Wisconsin not over 40 per cent. of the timber reached the sawmills.<sup>33</sup> Only the best and choicest timber was cut in the first logging of any district, and the slash which was left fed the forest fires which destroyed most of the remaining stand. This is particularly the case where the pine stands in fairly solid bodies as it did in Wisconsin. In the older states the pines were scattered through the hardwoods and the slash was distributed in the same way. Open spaces, caused by cutting the pine, were small and filled in rapidly, giving little chance for the surface material to dry out and become liable to burn. If all the slash in northern Wisconsin had been piled and burned as it was made there would still be, in all probability, large pine forests in almost every section. The numerous sawmills and other industries

<sup>31</sup> Wisconsin in Three Centuries. Vol. IV, p. 53.

<sup>32</sup> Griffith, E. M.: Report of the State Forester of Wisconsin, 1907-1908, p. 49.

<sup>33</sup> *Ibid.*, p. 50.

which depend upon the forests for their raw material would be in operation still, furnishing employment for a large number of people and forming a source of great income to the state.

The Peshtigo fire of October, 1871, which occurred in the region around Green Bay, is the most appalling forest conflagration in the history of the state, because of the loss of life. It is estimated that there were over 1,000 lives lost, 1,000 persons crippled, and 3,000 reduced to beggary.<sup>34</sup> In addition there were great property losses.

There were 1,435 fires between January and November, 1908, which burned over 1,209,432 acres, destroying 499,500,000 feet of merchantable timber worth nearly \$3,000,000, besides young growth valued at \$6,000,000, and improvements worth \$150,000. The cost of fighting these fires amounted to \$43,850 to the counties and \$55,820 to the timber owners.<sup>35</sup>

Of the 1,435 fires of 1908, 60 per cent. were set by farmers burning brush and stumps and clearing land; about 15 per cent. came from sparks from locomotives, and 25 per cent. from various causes such as the carelessness of hunters, campers, loggers, berry pickers, and Indians, and from lightning. The farmers, as a rule, consider burning the slashings an easy way of clearing their land and do not realize that the fire also destroys the humus and reduces the fertility of the land. Repeated burnings have reduced hundreds of acres of northern Wisconsin land to a condition resembling a desert.<sup>36</sup> In 1909 rains were frequent throughout the summer and the fires burned over only 166,000 acres with a total loss of \$104,000. The dry summer of 1910 caused forest fires in many regions. 892,000 acres were burned over with a loss of over \$5,000,000.<sup>37</sup> The greatest fire loss was caused by settlers clearing land.<sup>37</sup>

The effects of deforestation are numerous and important. (1) The flow of all the rivers heading in deforested areas has been changed in the past 40 years. (a) Navigation has been abandoned on the Wisconsin. (b) Logging and rafting are much more difficult on all the rivers. (c) The Fox River is failing to furnish the power it once supplied. (d) The same failure has been noticed on many smaller streams. (e) The "June freshet," which formerly was relied upon in log driving operations, has ceased on most of the streams and is uncertain in the rest.<sup>38</sup> (2) Drying out of the ground without artificial drainage is apparent where wagon travel

<sup>34</sup> Thwaites, R. G.: *Wisconsin*, p. 538.

<sup>35</sup> Griffith, E. M.: *Report of the State Forester of Wisconsin, 1907-1908*, p. 63.

<sup>36</sup> *Ibid.*, p. 59.

<sup>37</sup> *Ibid.*, 1909-1910, p. 113.

<sup>38</sup> Roth, F.: *Forestry Conditions in Northern Wisconsin*, *Wis. Geol. Surv. Bull.* 1, p. 41.

follows the side of the corduroy road which was once necessary because of the swampy condition. Many swamps have dried out and become hay meadows and fields without ditching. The drying occurred in some cases before the swamp timber was cut and in other cases after.<sup>38</sup> (3) The sponge-like covering of the soil produced by the growth and decay of vegetation has been destroyed, partly or entirely, in many places by lumbering operations and fires. The bare ground allows a rapid run-off of the rain and melting snow, which results in floods of the rivers draining these areas. Not only does the surface water run off rapidly, but it takes with it large quantities of soil, as evidenced by the deep ravines characteristic of the Lake Superior drainage slope, and by the muddiness of the rivers during flood.

Wisconsin is facing a timber famine. How much longer the timber will last can not be determined, due to the uncertainty as to the future rate of cutting and the liability to loss by fire. In 1909 the lumber cut was about 2 billion feet. In 1898, Roth estimated the annual growth to be about 900 million feet, of which only 250 million was merchantable pine. Probably the increase at present is less than it was then because of the great destruction of young growth by fire. The annual increase is balanced in part by the decay of old and over-ripe trees. The denuded lands unfit for agriculture must presently be reforested and scientific forestry practiced or soon Wisconsin must import a large part of the 930 million<sup>39</sup> or more feet of lumber which are consumed annually within the state.

Due to the realizing sense of the necessity of repairing some of the loss which the state has suffered by the destruction of the forests, the legislature of Wisconsin passed an act in 1897 for the appointment of a State Forestry Commission, charged, among other duties, with that of formulating desirable forest legislation for the state. In 1898 Mr. Filbert Roth, under the general direction of Dr. Fernow, Chief of Division of Forestry, made an investigation of forestry conditions in northern Wisconsin which was published by the Wisconsin Geological and Natural History Survey. The report of his investigations embraces a thorough and extended account of the conditions existing at that time and the future possibilities of the region.

The first forestry law, passed in 1903, provided for the setting aside of a forest reserve of some 40,000 acres in Forest, Oneida, and

<sup>38</sup> Roth, F.: Forestry Conditions in Northern Wisconsin. *Wis. Geol. Surv. Bull.* 1, p. 41.

<sup>39</sup> Griffith, E. M.: Report of the State Forester of Wisconsin, 1909-1910, p. 32.



Vilas Counties. In 1910 the reserves amounted to some 340,000 acres,<sup>40</sup> worth from 2½ to 3 million dollars, located chiefly in those counties which include the headwaters of the Wisconsin, Chippewa, and St. Croix Rivers. The objects of the reserves are (1) to preserve the stream flow by protecting the head waters, (2) to secure a future supply of timber for important industries dependent upon the forests for raw materials, and (3) to prevent soil wash.

In 1907 the state legislature passed a law by which any individual or corporation may plant not over 40 acres of land, worth not more than \$10 an acre and not situated within 2 miles of the limits of any incorporated city or villages, with not less than 1,200 trees to the acre and be exempt from taxation on the land so planted for thirty years. Little or no advantage has been taken of this privilege.

The legislature also passed a bill enabling the state to buy up tax title lands from the counties for reserves.<sup>41</sup> Land to the extent of 40 acres owned by individuals or corporations, may be exempt from taxation for a period of 30 years if it be covered by forest timber. This is to encourage the conservative cutting of timber.<sup>42</sup>

A United States Forest Products Laboratory was dedicated at Madison in June, 1910. The building belongs to the University of Wisconsin, which furnishes heat and power to run the machines. The United States Forest Service furnishes the best obtainable machines and apparatus and maintains a corps of sixty workers. The forest experts give a course of lectures to the students of the university on the various American woods. The laboratory staff is divided into sections each under the direction of an expert. These groups make investigations in timber tests, timber physics, distillation, paper tests, chemistry of woods, preservation of woods, and invention of machinery for treating woods.

The State Forester's Report for 1910 recommends that the state make more effective laws for the prevention and stopping of fires; that all the now unproductive land in the northern part of the state be utilized for forests; that the matter of determining whether any land is suitable for timber growing, the plan of management of the land and trees, the time of cutting and the amount of timber cut shall rest with the State Board of Forestry; and that there be a tax on the yield of timber land and a nominal tax or none at all on the land.

<sup>40</sup> Griffith, E. M.: Report of the State Forester of Wisconsin, 1909-1910, p. 23.

<sup>41</sup> *Ibid.*, 1907-1908, p. 62.

<sup>42</sup> *Ibid.*, p. 98.

(To be continued.)

## FIRST REPORT OF PROFESSOR BOWMAN'S EXPEDITION

In a letter dated Antofagasta, Chile, July 10, 1913, the Society has received from Professor Bowman the following account relating to the first part of the expedition to the Central Andes he conducted during the past summer under the Society's auspices, the plans of which were outlined in the May *Bulletin* (Vol. 45, 1913, pp. 348-351). Professor Bowman's route may be followed on the accompanying sketch map.

SAN PEDRO DE ATACAMA, CHILE  
July 2nd, 1913.

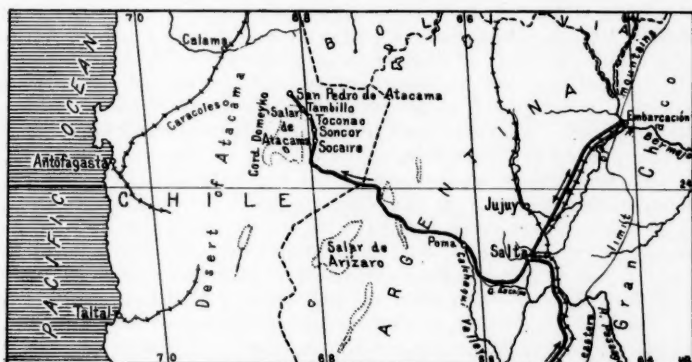
The expedition reached Salta, Argentina, on June 5th. A pack train was immediately fitted out and work begun on the Andean Cordillera on the west. Before starting for the mountains a short journey was made to Embarcación on the edge of the Gran Chaco where by chance we met Baron Erland Nordenskiöld, Director of the Museum at Göteborg, who was just starting out on a two years' ethnological exploration of the Gran Chaco.

From Salta the mountain trail runs west over the border ranges via the *quebrada* Escoipe, famous because it was by that route that Almagro, Pizarro's lieutenant, made his great march to Copiapo, Chile. Thence it ascends the deep Calchaqui Valley via La Poma to the La Paya *quebrada* which climbs up to the level of the vast Puna de Atacama, the region of volcanoes and borax basins. Our camps in the Cordillera were between 12,000 and 14,500 feet and our highest pass 16,800 feet. The minimum temperature experienced was  $-4^{\circ}$  F. ( $-20^{\circ}$  C.), and many other camps were made in temperatures between  $+10^{\circ}$  F. ( $-12^{\circ}$  C.) [and—?]. The last day and a half in the mountains we rode into a most fatiguing wind with temperatures between  $+1^{\circ}$  F. ( $-17^{\circ}$  C.) at 6 A. M. and  $+42^{\circ}$  F. ( $+5^{\circ}$  C.) at 2 P. M. But the earlier part of the journey was made in delightful weather, somewhat like our Indian Summer and called by the natives "El Verano de San Juan" after the feast of St. John, June 24th. At the end of a month's work we arrived at San Pedro de Atacama in good condition, having suffered nothing more than an attack of tonsillitis due to the combination of dust and cold, and during the last week we have been troubled with eczema on feet and also ankles.

It is difficult to say what part of our journey has been the most interesting, so novel and important is the region of borax basins, great volcanoes, and lofty plateaus through which we have just come. Perhaps the most important single feature is the life of the pastoral nomads on the western flank of the Cordillera where the long spurs of the volcanoes run down into the alluvium on the

border of the Salar de Atacama. Here, in a highly remote section of the mountains are preserved some of the ancient customs of the Incas, such as the communal vicuña hunts; here, too, are the annual migrations of the shepherds from the cold mountains to the warmer lower valleys of the pampas. The migrations are quite different from the feeble movements of the mountain shepherds farther north. Here the cold of winter is too intense for a prolonged stay in the mountains, and snow now and then blocks the passes so that the indispensable flocks of the mountain Indians can not be risked in the higher valleys and plateaus. In the great snowstorms movement across the Cordillera is impossible.

In the face of these risks a cattle trade is conducted across the mountains which without exception is the most extraordinary trade of its kind in the world. Every year between 25,000 and 35,000



Professor Bowman's Route in Northern Argentina and Chile, June-July, 1913. 1:8,300,000.  
The route is shown by the heavy line.

cattle are sent over the passes between Salta and Jujuy on the one hand and Calama and San Pedro de Atacama on the other and the winter driving is carried on almost as regularly as that of summer except during the short periods of storm. From the scattered *campos* of the Gran Chaco east of the Cordillera cattle are driven to Embarcación at the end of the railroad, shipped to the corn and alfalfa fields of Salta to be fattened, to the mountain pastures of Luricatao to become accustomed to the cold and the altitude, driven across 15,000 feet passes, forced across waterless plateaus and deserts absolutely without pasture of any kind through the deep hot sands of the piedmont on the western border of the Salar de Atacama, to be rested and fed on dry alfalfa for two days at San Pedro de Atacama. Then at the end of three days' march across a barren desert they arrive at the nitrate *oficinas* near the Pacific coast to become, in their toughened and emaciated condition, the food of the laborers in the nitrate works of the Desert of Atacama!

Skeletons of cattle line scores of miles of the worst parts of the trail. At one point there are over seventy where a herd of more than one hundred perished in the great storm of July 22-26, 1911, when several herders lost their lives and the passes remained closed for two weeks. What with dust and cold and heavy northwest winds, especially the terrible *viento blanco*, both cattle and men often reach the desert on the west scarcely able to walk. Little stone shelters a foot or two high are built at short intervals and every boulder beside the trail is a refuge behind which the herders seek temporary relief from the cold wind.

Next in interest are the chinchilla hunters who come from the little villages strung along the western edge of the mountains where the coastal desert begins. They range over the entire Cordillera but find their best supply in the line of volcanoes on the west. In one of their recent journeys into an almost unknown portion of the Cordillera Domeyko they came across a *pucará*, or old abandoned Indian fortress, and beneath an altar stone discovered a silver figure of a woman, a figure of a llama in gold, and that of a man in stone, all in miniature, and also small *mantas* and blankets of vicuña wool beautifully designed and of extraordinarily fine texture. We have photographs of all the objects, which have never before been found in this part of the Cordillera.

On the walls of one *quebrada* we encountered that extremely rare—in fact almost unknown—petroglyph, a design of a chinchilla skin, done to scale and faithful even to the minutest detail. At another point we encountered that equally rare thing, a petroglyph now in the making, where designs are still incomplete and the marks of the stone hammers are still fresh. Also new to me was the *apacheta* with a lined chamber where offerings of coca cuds, whittled sticks and candles are left by passing Indians. It was a kind of shrine and not merely a rough pile of stones of the ordinary kind.

The vast borax basins and the desert *salar*s were equally interesting, the one because of their genetic relation to the volcanoes and their cold isolated situations where even the mountain Indian shrinks from contact with the winter, the other because of their curious peoples and pleasant oases. San Pedro de Atacama, Toco-nao, Soncor, Socaire, are entrancing after a month in the bleak valleys and lofty plateaus of the Cordillera. Here once more are trees, green fields and hospitable people. The nights however are extremely cold. At Tambillos, altitude 8,000 feet, we had +5° F. (−15° C.) at 6 A. M. and +88° F. (+83° C.) at 2 P. M., a range of 83° F. (46° C.) in eight hours.

Among the desert towns San Pedro de Atacama stands out most prominently both in size and interest. It is a city of *arrieros* and carriers for the whole mountain region to the south and east and at one time even shipped general merchandise to Salta. It now receives and feeds cattle from Argentina. Its rise as a trading town is owing to the convergence of many desert and mountain

trails on this green spot in the middle of a vast desert. Each trail leads to an important town at some distant point. As the town grew streets were laid out—the improved terminals of the trails. So to-day each street bears the name of an ancient trail and each trail in turn bears the name of the distant place to which it leads,—hence Antofagasta street, Calama street, Caracoles street, etc. There is not a single street in the town but bears the name of a distant city.

We shall be able to complete our program on time if no accidents occur. So far we have had unusually good luck and no delays. The region has proved to be even more interesting than I had supposed. From the human standpoint it is by far the most important section of the whole Central Andes.

ISAIAH BOWMAN.

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### THE CROCKER LAND EXPEDITION

The expedition sailed from Brooklyn on July 2 for Smith Sound on the steam whaler *Diana*. A dinner to the scientific staff was given by members of the organizing committees at the University Club on July 1. On this exceedingly pleasant occasion speeches were made by the entire exploratory staff; by President Henry F. Osborn of the American Museum of Natural History; by Dr. E. O. Hovey, who spent many months most successfully in working out all the details of the enterprise; by Dr. Walter B. James, Vice-President of the American Geographical Society; by President William DeWitt Hyde of Bowdoin College, Me., two of whose alumni are members of the expedition; and the closing speech was by Rear Admiral Peary.

The June *Bulletin* (pp. 449-450) gave the names and summaries of the work of Donald B. MacMillan, A.M., leader and ethnologist of the expedition, W. Elmer Ekblaw, A.M., geologist and botanist, Ensign Fitzhugh Green, U. S. N., engineer and physicist, and Morris C. Tanquary, Ph.D., zoologist. In addition to these members of the staff Dr. Harrison J. Hunt was later appointed surgeon, Jerome Lee Allen expert electrician and wireless operator, and Edwin S. Brooke, Jr., official photographer, to return this fall. It is the general opinion that this is one of the most carefully planned and completely equipped expeditions that has ever left our country for the Arctic.

The *Diana* took most of the expedition's equipment from New York, but called at Boston on July 4 and 5 for seven tons of pem-

mican, some boats and her outfit of chronometers and watches. Her next port of call was Sydney, N. S., where she loaded, among other things, twenty tons of dog biscuit and 337 tons of coal. She sailed again on Saturday, July 12, expecting to touch at Battle Harbor, Labrador, where but little time would be required for the loading of her thirty-foot power boat, the *George Borup*, and some caribou skins. Then she was to start on the long stretch of 1,500 miles to Cape York. The Strait of Belle Isle, however, contained much ice and the difficulties of navigation were increased by a dense fog, so that the heavily laden sealer made slow progress toward the north, and at 1 A. M. on July 17 she went hard and fast aground on the rocks off Barge Point, Labrador, near the provincial boundary between Labrador and Quebec and a few miles from the fishing station of Red Bay.

Fortunately, the sea was not rough and the old wooden vessel held together while signaled and telegraphed calls of distress brought fishing schooners and the government vessel *Stella Maris* alongside. The deck load of coal was jettisoned and other supplies from deck and hold were transferred to the fishing schooners and the *Stella Maris*. The *Diana* was pulled off the rocks and the whole party went forward to Battle Harbor. Examination showed that the *Diana* was unfit to proceed to the Arctic regions and the steam sealer *Erik* of St. Johns was chartered to take her place.

Some time was occupied in preparing the *Erik* for the journey, loading her with coal and getting insurance upon her, and it was necessary finally for the *Diana* to creep along down from Battle Harbor to St. Johns and make the transfer of cargo at the latter place. As soon as this was effected, Mr. MacMillan and his party started once more for the north, leaving St. Johns on Thursday, July 31, and arriving at Battle Harbor at 8 A. M. on Sunday, Aug. 3. There they swung the *George Borup* on deck, took aboard the supplies which had been landed and left behind by the *Diana* and sailed on Monday, Aug. 4, for Cape York in latitude 76° N., on the west coast of Greenland, where they expect to make their first stop for the purpose of securing dog drivers and dog teams.

A special statement issued by the American Museum of Natural History, the American Geographical Society and the University of Illinois to the contributors to the expedition fund says that the reports received by Mr. MacMillan indicated an exceptionally open season in the far north, and he expected to find the Arctic waters freer from ice than they have been in twenty years or more, hence he hoped to proceed without delay to Flagler Bay on Ellesmere



Island (latitude  $79^{\circ} 10'$ ) and land his equipment by August 20. If Flagler Bay was too full of ice, the landing was to be made at Payer Harbor on Pim Island. When the landing has been effected, the *Erik* will return to St. Johns.

It is hoped to secure wireless connection with a point on the Labrador Coast about 1,000 miles distant and all messages will be transmitted by the Canadian Government, free of cost, to this country. Hunting will be started as soon as sledging is possible and during the late fall and the moonlight of the coming winter it is proposed to establish caches of food across Grinnell Land, Ellesmere Island to Cape Thomas Hubbard at intervals of about twenty miles.

The start for Crocker Land will be made with the coming of dawn in February, next year. It is hoped that the explorers will be able to cross the sea ice to Crocker Land in two weeks. Arriving there, one section of the party will travel northward along the coast, another southward and the third will visit the interior.

Returning to Cape Thomas Hubbard early in May, 1914, about a month will be spent in exploring, mapping and studying the unvisited regions in that neighborhood. When the party returns to headquarters about the middle of June the summer will be spent in scientific work there and in laying in supplies of walrus and seal meat for the following winter. In the spring of 1914 a section of the party will be sent into the region southwest of Cape Thomas Hubbard in search of new land. If it is found that Crocker Land does not exist, a journey to the summit of the Greenland Ice Cap will be undertaken in the summer of 1915. One or two men will be at the headquarters on Flagler Bay continuously for two years caring for apparatus and making observations on the weather, the seismograph and tides and receiving and transmitting messages through the wireless telegraph. The expedition has three years' provisions for men and dogs, plenty of clothing, all instruments needed in carrying out the extensive scientific programme, moving picture and other photographic apparatus, a powerful motor boat and a large whale boat. Among the contributions was a generous subscription from the University of Illinois which enabled the committees to add a trained zoologist to the scientific staff.

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Since the above was put into type the *Tribune* has published under date of Sept. 16, a long letter from Mr. MacMillan announcing the successful voyage of the expedition to Etah, northwest

Greenland, famous in many American expeditions to that part of the Arctic. Etah was to be the last halting place of the *Erik* before attempting to cross Smith Sound to Ellesmere Island, where the expedition was to establish its winter camp.

Unfortunately, Smith Sound was choked with pack ice, and after vain attempts for a week to force a passage through it the party was reluctantly compelled to give up the idea of reaching Ellesmere Island this year. The *Erik* was unable to approach within fifteen miles of Cape Sabine or of Payer Harbor on Pim Island. It was necessary for the *Erik* to hasten her departure south, as she had only two months' provisions and could not afford to run any risk of being detained in the north for the winter. The massive pack ice extended without a break from Littleton Island to Cape Sabine and as far north in Kane Basin as the most powerful glasses could reveal.

Thus Etah became the headquarters for the expedition. All the supplies and equipment were landed and a house was being built when the *Erik* sailed south. The expedition had secured eight good dog drivers with their wives and families, a total of 26 Eskimos, 80 dogs and 25 pups. The dogs were of unusually high grade. In a few days 16 large walrus and five small ones were killed for dog meat. Although Etah is perhaps the best site on the Greenland coast for the purposes of the expedition, it is not comparable with Koldewey Point on the Bache Peninsula of Ellesmere Island, where the expedition had hoped to winter. The *Erik* left the entire party in good health, optimistic and determined to make the best of their bad fortune in not attaining Ellesmere Island this year.

## DISCOVERER OF THE PACIFIC OCEAN

Four hundred years ago, on September 25, 1513, Vasco Nuñez de Balboa discovered the Pacific Ocean. As a young man he had wasted his patrimony at home, his debtors made life intolerable for him in Santo Domingo, to which he had retreated, and, concealed in a cask to avoid arrest, he sailed from Santo Domingo with Enciso in 1510 when the attempt was made to plant new Spanish colonies between Cartagena and Veragua on the Isthmus of Panama.

Vasco Nuñez is best known in the English speaking world simply as Balboa. He came to the front when this Spanish enterprise was overwhelmed by hopeless disaster. At that time he showed himself a leader of men, superseded Enciso in command, and, full of resource, energy and courage he did all he could to save the remnant of the expedition. The turning point of his life arrived with this opportunity to retrieve the misfortunes of his hapless compatriots scattered along the coast. The discovery of the Pacific was the crowning event of his career; and two years later, at the age of forty-three, he perished on the scaffold, a victim of the jealousy and treachery of unscrupulous men who had plotted against him at the court of Spain and had been placed in authority over him.

The new colonists along the coast were dying of fever and starvation when Balboa took the helm. He collected as many of the immigrants as possible at Darien on the Isthmus, planted crops, made friends of the native chiefs and was able before long to give attention to exploration and above all to the quest for gold. On one of his journeys into the interior he met the son of the Indian Cacique of Comogre, who presented some gold dust to the men under Balboa's command. They were quarreling over its disposition when the young man said to them:

"Why do you wrangle over so small a matter? If it is love of this metal that leads you to disturb the tranquillity of our country I can take you in six weeks along the border of another ocean where there is plenty of gold."

This was the first intimation that came to Europeans of the Western Sea. Gold was so plentiful near its coast, the young chief said, that the meanest utensils were made of it.

Balboa at once determined to find the new sea that led to the

land of gold. He returned to Darien to organize his expedition; but while zealously making his preparations, a vessel arrived from Spain with the news that Enciso, who had been deposed and sent back to the mother country, had gained the favor of the government and that Balboa had been condemned by the king and ordered to return to Spain.

In the hope to propitiate his sovereign by the achievement of some notable work, Balboa made all haste to fit out his party and on September 1, 1513, started with 190 Spaniards and many natives to find the new ocean. Francisco Pizarro was one of his officers. The object of search was only about sixty miles away, but to reach it dense forests had to be penetrated, steep mountains, deep rivers and morasses crossed, while unfriendly Indians increased the difficulties of the march. At last the party was rewarded for its privations by the sight of the great ocean. The young chief, who had told Balboa of its existence said that its surface was smooth, instead of ruffled like the Caribbean. From the summit of the range Quareca, where its waters were first seen in the distance, Pizarro and two others were sent forward to reconnoiter and one of them, Alonzo Martin, was the first European to launch a boat upon the new-found ocean. He pushed off from the shore in San Miguel Gulf. It was Magellan, who first crossed the ocean, that gave it the name Pacific.

Balboa reached the shore himself on September 29 and took formal possession of the "South Sea" (Mar del Sur) in the name of the king of Spain. He called it the South Sea because he traveled across the Isthmus from north to south to reach it. He remained on the coast for some weeks, gained further information about Peru, visited the archipelago of the Pearl Islands and then retraced his route to Darien. With the large booty he had collected, Balboa entered the town in triumph on January 18, 1514. He lost no time in dispatching a vessel to Spain with presents for the king and a full account of the discovery. Though he had disobeyed the king's command to return to Europe, his majesty was disposed to forgive him in view of his achievements. He named him the Admiral of the Pacific and appointed him Governor of Panama and Coyba; but scarcely had he conferred these honors upon Balboa than he inclined again to the appeals of the latter's enemies. An expedition was soon on its way under the command of Don Pedro Arras de Avila (now generally written Pedrarias Dávila) to supersede Balboa in the government of the Darien colony.

While all this was occurring Balboa crossed the Isthmus several times, took possession of the Pearl Islands, gathered materials for building two small brigantines, armed and launched them, and if it had not been for bad weather he might have reached the coast of Peru before the arrival of his successor in office. His plans for the conquest of Peru and the exploration of the western ocean were considerably advanced when he was summoned to Darien by the arrival of Pedrarias, who proclaimed that Balboa was a traitor to the king and had thrown off his allegiance. He arrested him at Acla, not far from Darien, thrust him into prison, had him tried for treason and compelled the judge to pronounce him guilty and to condemn him to death. The outrageous sentence was carried into execution in the public square of Acla in 1517.

From an unpromising beginning, Balboa had developed into a man of affairs, a brilliant shaper of events, an able colonial governor, and a far-seeing statesman, who probably would have rendered further service to his country if he had been permitted to live.

It was after his death that Pizarro, who had served under Balboa, carried the war into Peru that led to the downfall of the Inca empire.

## GEOGRAPHICAL RECORD

### NORTH AMERICA

**Annals of the Association of American Geographers.** Volume 2 of this annual appeared about July 1. The Association and the Editor, Professor Richard E. Dodge, are to be congratulated on the high standard which this annual is maintaining and on the excellence of its mechanical production. In addition to the titles and abstracts of papers read at the Washington meeting in 1911, the constitution and by-laws and a list of the members in December, 1912, the following papers appear:

Glaciers and Glaciation of Alaska, by R. S. Tarr; An Effort to Control a Glacial Stream, by R. S. Tarr and L. Martin; The Local Distribution of the Reptile-Amphibian Fauna in Southern Vera Cruz and Its Bearing on the Origin of the Savannas, by A. G. Ruthven; On the Proper Map for Determining the Location of Earthquakes, by W. L. G. Joerg; Industries of Wisconsin and Their Geographic Basis, by R. H. Whitbeck; The Noatak River, Alaska, by P. S. Smith; A Geographical Pilgrimage from Ireland to Italy, by W. M. Davis; Memoir of Christopher Webber Hall, by L. Martin.

The volume should be in all our libraries and in the hands of every working geographer. The price is \$3.00 unbound and \$3.50 in bound form. The work may be procured by addressing R. E. Dodge, Editor, Washington, Conn. Under the arrangement between the American Geographical Society and the Association of American Geographers (*Bull.*, June, 1913, p. 442), a copy of the present volume of the *Annals* was mailed by our Society to each of its members.

**Oceanographical Investigations.** Mr. E. W. Shaw has recently returned from an ocean trip from Galveston to Charleston, S. C., for which the U. S. S. *Fish Hawk* was made available by the Bureau of Fisheries. The cruise was for the purpose of studying processes of deposition, particularly near the mouth of the Mississippi. About 1,000 pounds of samples of water and bottom materials were collected and observations made on temperature, salinity, currents, etc., of surface and bottom water. The most important bottom samples were made with a new instrument and have the form of cores 3 to 5 feet long, which preserve all the characters of the materials within that distance below the bottom of the water.

**Geography in the U. S. Forest Service.** At our request, Mr. Fred G. Plummer, Chief of Geography of the Service, kindly sent the following information on the geographical work of this bureau of the Department of Agriculture. The geographical work is largely confined to the preparation of a complete set of map records of the national forests, supplemented by statistical and graphical records relating to forests in the United States and other countries. This central map record in the office at Washington is called "The Forest Atlas" and now comprises about 200 volumes, 18 by 21 inches and 4 inches thick. The atlas has been in preparation since 1906 and it is expected that the record will not be complete until about 1920.

The Forest Service is training its personnel in order to increase efficiency. Matters pertaining to forest geography are discussed at Supervisors' and Rangers' meetings, instructions are published relating to the preparation of forest surveys and maps and all instruments and methods have been standardized. The Washington office is fully equipped for the collection of data and its preparation in graphic or statistical form and also for its publication and dissemination. Six branch offices are established in the west at Missoula, Denver, Albuquerque, Ogden, San Francisco and Portland. The Chief of Geography visits these offices once and sometimes twice a year.

All of the geographical work is practical and is immediately applied and used in the protection of the forests and in dealings with the public in order to



promote the proper use of the forests to the fullest extent. The range of activity therefore covers silviculture, grazing and more than 100 special uses of forest land; also forest engineering, such as the proper location and construction of improvements, as roads, trails, bridges, etc.; and forest sanitation, in order that the streams may be protected, not only in relation to the volume of flow, but also as to their purity.

**Our Coal Production in 1912.** Our production of coal in 1912 reached 534,466,580 short tons, valued at the mines at \$695,606,071, according to a statement by Edward W. Parker, coal statistician, recently issued by the U. S. Geological Survey.

The United States at present is contributing 40 per cent. of the world's supply of coal and is consuming over 99 per cent. of its own production.—(*U. S. G. S. Press Bull.*)

**Petroleum Production in 1912.** Our production of petroleum in 1911, which was 220,449,391 barrels, was passed in 1912, when the total reached 222,538,604 barrels. Higher prices were the rule in 1912 except in California, and even in that state there was no material decline. The total value therefore reached \$164,087,342, or 22.41 per cent. above the value for 1911. The greatest increase in quantity was in California, where the total advanced from 81,134,391 to 86,450,767 barrels. Wyoming showed the remarkable gain of 742 per cent. from 186,695 barrels to 1,572,306 barrels.—(*U. S. G. S. Press Bull.*)

**Rainfall of Berkeley, California.** In the *University of California Publications in Geography* (Vol. I, No. 2, April 9, 1913), William Gardner Reed has an excellent short paper on "The Rainfall of Berkeley, California." Commendable care is exercised in stating clearly at the start the nature of the material used, and how the exposure of the rain-gauge has varied during the period of observation. A topographic map of the district is very wisely included. Observations are available for 25 years. Several diagrams emphasize the points brought out in the discussion. Berkeley rainfall is distinctly of the sub-tropical type. Most of the rain falls between the beginning of November and the end of March. July and August are usually dry. The mean annual amount is 26.60 inches, but the amounts of different years depart considerably from this mean. The departure is, however, less than 15 per cent. in over half of the years. No progressive change in rainfall is indicated.

R. DE C. WARD.

**Wisconsin Geographical Society.** A local branch of this Society has been organized in Madison, Wis. Under its auspices two classes, primarily for teachers, have been formed for the study of the geography of Europe and Africa. Field trips, lectures and study and reading courses are included in the programme.

**Atlases in the Congressional Library.** The Division of Maps and Charts of the Congressional Library is at work on the third volume of the "List of Atlases in the Library of Congress" which is likely to appear before the end of the year.

**Preserving Mayan Ruins in Yucatan.** While Mr. W. P. Wilson, Director of the Commercial Museum, Philadelphia, was in Yucatan last winter for economic investigations he improved the opportunity to visit the ruins of Labna, Sayil, Kaba, Uxmal, Chichen Itza and one or two others. He writes to our Society:

"As is well-known, Yucatan is covered with many kinds of ruins. The chief ones should be preserved for future geographical and historical interest. The Mexican Government is at present furnishing a single caretaker to some of the chief ruins which are bound up with the early history of the Maya Indians. There should be created in Mexico and in the United States a united organization laboring to secure money to preserve the most important of these ruins. They are all built of limestone cemented with mortar which is now crumbling and allowing the beautiful façades and columns in many of the chief structures

to fall to the ground. If restoration were begun at once, some of the larger buildings, which have partially fallen, could now be restored for later study which may add extremely important knowledge to one section of the human race. Interest in the preservation of these magnificent structures has already been stimulated through Professor Morley, who has been recently making special studies with reference to the age of these ruins through interpretation of the hieroglyphs."

**The Comisión Geográfico-Exploradora of Mexico.** A letter from Mexico informs the Society that the work of this institution is being prosecuted with renewed activity under the management of Brigadier-General José Gonzalez Moreno of the General Staff, its newly appointed Director. Two field parties are at present continuing the surveys for the 1:100,000 General Map of the Mexican Republic, one in the State of Hidalgo, the other in Oaxaca. Although their field observations are primarily intended to serve in the preparation of the above map they will also be used for the compilation of a map of the State of Hidalgo (1:200,000) and a map of the State of Oaxaca (1:250,000). There are now maps of the States of Nuevo Leon and Tamaulipas (1:500,000), of Puebla (1:250,000) and of Morelos and Tlaxcala (1:100,000).

Officials of the Comisión are preparing a collection of their maps on scales from 1:20,000 to 1:1,000,000 for exhibition at the Panama World's Fair of 1915.

#### SOUTH AMERICA

**Explorations in Northern São Paulo.** Results obtained by four parties engaged in investigations since 1910 along the banks of the Rio Grande and its affluents have been published by the Comissão Geographica e Geologica do Estado de São Paulo in a report entitled "Exploração do Rio Grande e de seus afluentes." The region is situated between the point of confluence of the Rio Grande and the Paraná Rivers and the town of Rifaina east of the railroad station of Igarapava. It has forests of valuable trees and soils of excellent quality. A number of important waterfalls may be profitably harnessed and made to yield cheap power. The data of economic importance are accompanied by descriptions of the topography of the region as well as of its geographical and geological features. One of the parties determined the geographical coordinates of the more important localities visited. A map (1:50,000) accompanies the report. The data obtained will also be available in the compilation of the topographic survey sheets which the state has been issuing for some years.

**Population of Buenos Aires.** The population of the municipality of Buenos Aires is rapidly increasing. On March 1 this year the number of inhabitants was 1,439,528 as compared with 1,369,286 on March 1, 1912.

**Dr. E. v. Nordenskiöld Returns to South America.** This Swedish ethnologist left home on April 7 on his third journey to Bolivia and Peru. His studies will again relate to some of the Indian tribes there. He also intends to make archaeological excavations.

**The Geographical Society of Rio de Janeiro.** This Society is preparing a medal commemorative of the twenty-fifth anniversary of its foundation, which will be celebrated in 1914.

#### AFRICA

**An Economic Study of Morocco.** Mr. L. Gentil, the well-known explorer of Morocco, has been commissioned by General Lyautey to make economic investigations especially intended to foster the development of the country's natural resources. Geological, zoological, botanical and geographical work will also be carried on as far as practicable. Mr. Gentil spent some time in the United States after his return from the west coast excursion of the XIIth International Geological Congress to study administrative methods in the Federal and State surveys of our country.

**Improving Tripoli's Ports.** Until the recent occupation of the coasts of Tripoli by the Italians practically the only means of communication between Mediterranean steamers and the shores were lighters which carried freight and passengers to and from vessels. The Italians are now energetically engaged in the development of harbors along this coast. The first step is to improve the present facilities for exchanging freight and passengers between ship and shore by lighterage; and at the same time to plan for building breakwaters which will enclose and protect harbors. At the city of Tripoli a breakwater 1,300 feet long is to be built on the northwest side of the port to protect shipping against the prevailing northwest winds. The reefs within the harbor basin will be destroyed and the harbor will be deepened to 30 feet. Similar improvements will be made at the other important ports.—(*Marine-Rundschau*, Feb., 1913).

**Irrigation in the Sahara.** The French continue to enlarge the cultivated area in the desert south of Biskra. They recently struck water at Tolga at a depth of 217 feet and the well is yielding the unusual quantity of 1,680 quarts a minute. This stream is enlarging the cultivated area of the oases, not only supplying the old acreage of date palm groves with a more adequate volume of water but also nourishing over 100,000 palms that have recently been planted. Thus an important area adapted for cultivation is now being developed and the water will be utilized not only in the Tolga neighborhood but also in oases along the Wadi Djeddi.—(*L'Afrique Franç.*, Vol. 23, 1913, No. 4, p. 165).

**Irrigation by Sun-Power in North Africa.** Details have recently been given of a pumping plant on the banks of the Nile in which the direct rays of the sun constitute the motive power. Five parabolic reflectors are mounted on steel frames 204 feet long, 20 feet apart, and having an area of 13,500 square feet. These reflectors are kept in a constant position relative to the sun by a thermostat. The solar rays are concentrated on a central boiler so as to raise steam at 100 lb. pressure, driving pumps delivering 6,000 gallons per minute with a 30 feet lift. The initial cost of the plant is £4,000, and the annual expenses £750. A steam plant of equal power would cost £2,000, with annual charges of £550, excluding fuel.—(*South African Journ. of Sci.*, Vol. 9, 1913, No. 9, p. 222).

**Improvements at Matadi.** The port of Matadi, 90 miles up the Congo River, is the place where foreign vessels discharge freight intended for the upper Congo and receive rubber, ivory and other commodities brought down from the interior. It is connected by the Congo railroad, 240 miles long, with Stanley Pool, whence there is steam navigation on the upper Congo and its tributaries for over 5,000 miles. The port facilities of Matadi are now to be enlarged by the Congo R.R. Co. to meet the demands of business. The first improvement will be the construction of docks at which four large ocean steamers will be able simultaneously to discharge or take on cargoes.—(*Mouv. Géogr.*, Vol. 30, 1913, No. 26, cols. 307-311).

**Antananarivo Connected with the Sea by Rail.** The Madagascar R.R. having been extended from its eastern terminus at Brickaville to the seaport of Tamatave, there is now through rail traffic between Tamatave and Antananarivo, the capital of Madagascar, 229 miles. *The Board of Trade Journal* (April 17, 1913, p. 144) says the line was opened for freight and passenger traffic on March 9. The capital is a city of over 100,000 inhabitants. For some time after the French occupancy, porters were the only means of transport between this city on the interior plateau and the coast. The necessity for improved transport was so great that the French first built an automobile freight road which has now been supplanted by the rail route. Mr. James G. Carter, our Consul at Tamatave, reports in the *Daily Consular and Trade Reports* that the railroad cost \$13,210,850. The colony is now building a railroad from Antananarivo to Antsirabe, 107 miles south.

## ASIA

**Dr. F. de Filippi's Karakoram Expedition.** With the substantial aid of the Indian Government and large contributions from other sources, Dr. de Filippi and his scientific staff started for Bombay at the end of July to carry out the scientific researches in the western Himalaya and Karakoram that were outlined in the *Bulletin* (Feb. 1913, p. 136). The scientific members of his expedition include Commander A. Alessio of Padua, Geodesist; G. Adetti, Astronomer; Professor O. Marinelli of Florence, Geographer; G. Dainelli of Florence, Geologist; Professor A. Amerio of Padua, who will make studies in atmospheric electricity and solar phenomena with the assistance of Marquis N. Venturigimori, who will also have charge of meteorological work; Lieut. C. Antilli, Photographer; J. A. Spranger of the University of Cambridge, Topographer; and J. Petigax, who will lead the mountaineering work. The party expects to be in the field over a year. About \$50,000 were subscribed to cover the expenses.

**Droughts in India.** The economic, political and social importance of the droughts of India is so striking that Dr. Gilbert T. Walker, Director-General of Indian Observatories, has done a useful piece of work in his recent investigation of "The Liability to Drought in India as Compared with that in Other Countries" (*Mem. Indian Met. Dept.*, Vol. XXI, Part V, 1912). A study of selected data for the United States, Europe, Asia (outside of India) and South America has been made. Dr. Walker notes that, although a further investigation of other meteorological factors, such as humidity and winds, concerning which there is little available information, would be needed in an adequate discussion of his problem, yet "it appears safe to conclude that of those countries which are dependent on agriculture and are not liable to famine none has a rainfall so precarious as that of India." R. DEC. WARD.

## AUSTRALASIA AND OCEANIA

**A Submarine Bank South of Tasmania.** The *Geographical Journal* (May, 1913) has a note by Professor T. W. Edgeworth Davis on soundings made by Captain J. K. Davis of Dr. Mawson's Antarctic ship *Aurora*, when on his way to and from Wilkes Land in November and December last. These soundings show that a great submarine bank exists to the south of Tasmania. The ocean bed descends steadily for 100 miles south of Tasmania to 2,082 fathoms and then rises again till it forms the crest of a ridge at least 150 miles long. As far as is now known the shallowest waters over the ridge have a depth of 545 fathoms, but as the ocean in adjacent areas east and west sinks to depths of 2,450 to 2,700 fathoms, the ridge rises at least 11,000 feet above the ocean floor. The ridge seems to be about 100 miles wide and has a rocky bottom. Professor Davis believes it is a fragment of a lost continent which at one time may have connected Tasmania and Antarctica; and he compares the deep trench separating it from Tasmania with the smaller trench which forms Bass Strait and separates Australia from Tasmania.

Captain Davis also discovered another bank about sixty miles north of Macquarie Island, rising from a depth of 1,750 fathoms to within about 570 fathoms of the surface.

**Dr. Wollaston's Work in Dutch New Guinea.** The *Geographical Journal* reports (April, p. 391) that news has reached Holland from an official source that Mount Carstensz, the highest known summit of the Snow Range of western New Guinea, has been ascended by Dr. A. F. R. Wollaston, accompanied by Lieut. van de Water of the Dutch army. An earlier attempt to reach this summit had failed. The height of the peak, at one time estimated at about 18,000 feet, has been reduced by recent surveys to under 16,000 feet.

In the May *Geogr. Journ.* (pp. 492-493) are some details of Wollaston's work to the beginning of this year. A base camp was established at the head of navigation on the Utakwa River 20 miles from the south coast at the head of navigation by motor boat. Two days farther the river became too shallow for the canoes. This second camp was only 32 miles from the sea in a

straight line, but the windings of the river increase the distance to about 60 miles. Thence the party traveled west-northwest to the foothills and established the first food depôt at an altitude of 1,600 feet. Two more supply depôts were formed at intervals of three days' marching. Magnificent views of Mount Carstensz were obtained almost daily for an hour after sunrise. They indicated that when the snow was reached there would be no extreme difficulty in attaining the highest summit. Mr. Wollaston hoped to ascertain the connection between Mount Carstensz and the larger snow field observed on the former expedition, the general extent of the snow and the possible existence of higher ranges to the north. He did not expect to be able to map a large extent of country as the dense jungle, deep ravines, rapid rivers and intense humidity made traveling very difficult. Many plants and birds were secured and it was hoped to obtain still more interesting collections at higher altitudes. In December, Mr. Wollaston and Mr. Kloss arrived within about eight miles of the snow tops. Above 4,000 feet they found a considerable population, friendly and interesting folk, smallish and real mountain people, but not pygmies. The country was very steep, and without native tracks it would have been impossible to reach a high altitude.

#### EUROPE

**Volcanic Outbursts near Mt. Hecla.** The *Zeitschrift der Gesellschaft für Erdkunde zu Berlin* (1913, No. 6, pp. 474-475) prints a short account of the volcanic outburst that was reported by cable from Reykjavik on April 25 between 3 and 7 o'clock in the morning. A crevice opened in the lowland to the northeast of Mt. Hecla in an uninhabited area between the small rivers Thjorsa and Skapta. A narrow crack opened about three miles in length along which a row of small lava craters soon appeared, while much of the lava flowed away in several streams to lower ground. The lava melted much of the snow around and cooled off so quickly that it was not dangerous to approach the lava streams soon after they began to flow. It was thus possible to approach quite closely to the points of eruption, of which a number of photographs were taken. They are the first photographs of a volcanic eruption in Iceland. Volcanic ash and pumice were in comparatively small quantities and were observed only near the several points of outbreak. Mt. Hecla was last in eruption on Sept. 2, 1845, but this outburst lasted seven months. Only one outbreak has since occurred in the neighborhood of Hecla and this was from March till July, 1878, in the Krakatindur, a region to the southeast of Hecla and entirely uninhabited.

**Glaciers in the French Alps.** It is always with a sense of admiration that an American student of glaciers reads of the detailed observation of the ice tongues in the long-settled and easily-accessible parts of the Alps. This is the case with a recent publication dealing with the glaciers of the Massif du Mont-Blanc, Haute-Maurienne and Tarentaise in Savoy (M. Mougín, *Études glaciologiques en Savoie*, Tome II, Ministère de l'Agriculture. Imprimerie Nationale, 1910, pp. 1-140). The description of the Glacier des Bossons will serve to illustrate this publication.

The glacier rises among peaks 3,843 to 4,570 meters high and terminated in 1904 at an altitude of 1,187 meters in an ice tongue 1,100 meters wide. Like the other glaciers of Chamonix, it had a strong advance in 1643. It had a second advance, beginning in 1774 and terminating in 1780. In 1812 began a period of six cold seasons, causing a great advance which terminated in 1818, so menacing the village of Montquart that the frightened people went out to the glacier margin, as their ancestors had done in 1643, in a procession which set up a cross. As a result of the locating of this cross at the glacier margin on a known ancient date it is possible accurately to map and measure the amount of retreat of the glacier terminus from 1818 to 1904. This recession is a little less than a quarter of a mile. There were advances and retreats during the following years.

The map of the terminus of the Glacier des Bossons, made in 1904, is reproduced in this report (Plate XIII) on a scale of 1:7500, or about 600 feet to an inch. It shows the topography of the adjacent valley by contours of 10-meter

interval, as well as the streams from the glacier, the roads and buildings, and the cross erected in 1818, thus making it possible to resurvey the region at times of future advances or to determine the rate of continued recession of the glacier. Two cross-sections of the ice tongue were surveyed in 1904 (ligne bleue and ligne rouge). These served for accurate measurements of (a) the rate of movement and (b) the rate of surface melting in 1905, 1906, 1907, and 1908, when the glacier terminus and borders were also resurveyed. In four years the terminus melted back  $42\frac{1}{2}$  meters or about 139 feet.

The report also has photographs of the Glacier des Bossons in 1830, 1892, 1900, and 1908, and of parts of its terminus, from well-marked cairns, in 1904, 1906, 1907, and 1908. Altogether, an admirable body of fact is gathered for interpretation of the past history of the glacier and for future studies, especially as this ice tongue is accessible and will be studied continuously in the future and as records of such climatic fluctuations as increase and decrease of snow-fall and variation of temperature are available for a long period of years, both from places like Chamonix in the valley and from the summit of Mont Blanc in the snowfields.

The other glacier descriptions deal with the Glaciers du Tour, d'Argentière, de Bionassay, de Tré-la-Tête in the Massif du Mont-Blanc, the Glaciers du Mulinet, du Gran-Méan, d'Arnès, du Baounet, and the Glacier des sources de l'Arc in the Haute-Maurienne, and the Glacier de Gébroulaz of Tarentaise. These are illustrated by photographs and large scale maps (1:6000, 1:7500, and 1:12,000).

It is especially fortunate for glacialists that the work is being undertaken on so thorough a scale. A complete study is promised of a whole glacier, including the snowfields and the ice tongue as well as the terminus, and for this purpose the Glacier de Tré-la-Tête, flowing westward from the Massif du Mont-Blanc, has been chosen.

LAWRENCE MARTIN.

## POLAR

### ARCTIC

**Census of Greenland.** The last census of Greenland, October 1, 1911, shows that the Danish colony had then a population of 13,459, as against 11,893 in 1901. The increase during the past ten years is the largest on record for a similar period. The native population numbers 13,075 and the European 284. The largest settlement is Sydproven (Pop. 766) and the smallest is Skansen (46). The number of natives had doubled in the last 100 years. Polygamy does not now exist. (*Daily Consular & Trade Repts.*, No. 210, Sept. 9, 1913.)

### ANTARCTIC

**Meteorological Reports by Wireless from the Antarctic.** Daily meteorological reports are being received in Melbourne both from Commonwealth Bay on the Antarctic Continent and from Macquarie Island in the Southern Ocean, by which important assistance has been given in framing the weather forecasts for Australia, as much of the bad weather originates in cyclones which travel from the Antarctic regions. We are informed that the station on Macquarie Island has been taken over by the Commonwealth Government, so that it can be expected to become a permanent outpost of weather study, bearing much the same relation to Australia that Iceland does to Europe. (*Symons's Meteorol. Mag.*, Vol. 48, 1913, No. 570, p. 101).

## PHYSICAL GEOGRAPHY

**Volcanic Eruptions, Atmospheric Transparency and Temperature.** An investigation of unusual interest, and one whose results suggest a new explanation of geological changes of climate, is that of Messrs. C. G. Abbot and F. E. Fowle, of the Smithsonian Institution, entitled "Volcanoes and Climate" (*Smithson. Miscel. Coll.*, Vol. 60, 1913, No. 29). After the eruption of Mount Katmai, in Alaska, on June 6 and 7, 1912, the transparency



of the atmosphere was much reduced. This was noticed both at Bassour, Algeria, and at Mt. Wilson, Cal., the total direct radiation from the sun being reduced by nearly or quite 20 per cent. when the effect was at a maximum. The quantity of heat available to warm the earth was apparently diminished by nearly or quite 10 per cent. by the haze, although there is some indication that this was in part counterbalanced by a decrease in the earth's radiation to space, caused by the haze. Great volcanic eruptions in former years have been followed by similar periods of haze, and the influence of several of the recent eruptions caused pronounced decrease in the recorded values of solar radiation. Evidence is further presented that the dust layer of 1912 affected terrestrial temperatures, especially of high level stations, and a remarkable correspondence is found between the average departures of the mean maximum temperature for 15 stations of the United States and a curve representing a combination of sunspot numbers of Wolfner and the departures from mean values of the annual march of direct solar radiation from 1883 to 1909.

R. DEC. WARD.

#### OBITUARY

ERNEST GEORG RAVENSTEIN. This well-known German cartographer and geographer died on March 13 at the age of seventy-nine years. Most of his active life was spent in London. He was best known for his superior map sheets of German East Africa, his historical and geographical labors relating to the early period of discovery and his work in the field of geographical methodology. His 25-sheet map of Eastern Equatorial Africa (1:1,000,000), published between 1881 and 1883, and his 9-sheet map of British East Africa (1:500,000) published in 1889 were models of exhaustive and critical research. An authority on the cartography and discoveries of the Middle Ages, he edited some volumes of the Hakluyt Society's publications and at the International Geographical Congress in London (1895) he arranged and catalogued the exhibition of geographical books and maps. His last important work, "Martin Behaim, His Life and His Globe," published in 1908, was a critical examination of the materials used by the Nuremberg geographer in the compilation of his famous globe.

#### PERSONAL

Dr. J. Walter Fewkes spent the summer in Washington in the preparation of a report on the "Aborigines of the West Indies" to which he has been devoting most of his time during the past year.

General A. W. Greely, U. S. A., was the only American member who attended the meeting of the *Institut Colonial International in London*. He was asked to report on the forests of the colonies of the United States. He was also a guest of honor at the Antarctic dinner and the Albert Hall reception in honor of the survivors of the Scott Antarctic Expedition. He was one of the three speakers at the anniversary dinner of the Royal Geographical Society. He expects soon to return home.

Mr. Arthur R. Hinks, first assistant at the Cambridge Observatory and R. G. S. Lecturer in Surveying and Cartography at the Cambridge School of Geography, has been appointed Assistant Secretary of the Royal Geographical Society. He will relieve Dr. J. Scott Keltie, the honored secretary of the Society, of a portion of his labors.

Mr. George Mixer of Boston, during the summer of 1912, visited Lake Baikal, Siberia, and secured specimens of the native bear and of the seal peculiar to that lake for the National Museum of Washington.

Dr. C. G. Seligmann has been appointed Professor of Ethnology in the School of Economics of London University.

Dr. Edward Luther Stevenson, long Professor of History at Rutgers College and now Secretary of the Hispanic Society of America, has received the honor of knighthood conferred upon him by King Alfonso of Spain. He also received the Degree of Doctor of Laws from Franklin College, Indiana.

# GEOGRAPHICAL LITERATURE AND MAPS

(INCLUDING ACCESSIONS TO THE LIBRARY)

## BOOK REVIEWS AND NOTICES

(The size of books is given in inches to the nearest half inch.)

### NORTH AMERICA

**The Leading Facts of New Mexican History.** By Ralph Emerson Twitchell. Vol. II. xii and 631 pp. Maps, ill., index. The Torch Press, Cedar Rapids, Iowa. 1912. \$6. 10 x 6½.\*

The topics are presented with great abundance of detail. The period treated is 1820-1912. Although documentary information prior to the American occupation is meager, Mr. Twitchell has been able to prepare a most creditable account of New Mexican affairs during the period when the state formed part of the Mexican Republic. Accurate descriptions of New Mexican customs and social life are included in the text. The chapter on the old Santa Fé Trail is one of the best in the book—as informing to the student of economic geography as to the historian. Those who, like the present reviewer, have traveled over this famous highway will see ample evidence that the writer has lived long in the region where occurred the events he records. The establishment of this famous southwestern trade-route is correctly ascribed to the settlement of the valleys of the Mississippi and the Missouri. Nature's own provision in the shape of a route is revealed by the traders treading the path which had been blazed by Spanish conquistadores over two and a half centuries earlier.

An excellent glimpse of city life in historic Santa Fé is afforded by skilful portrayal of customs and manners. Allusion to the war with Mexico is mainly confined to the American occupation of New Mexico. The creation of the Territory of New Mexico and the Texan state boundary controversies have due attention.

The part played by New Mexico in the Civil War is dealt with at length and much light is shed on the vexatious question of Spanish and Mexican land grants.

The maps, though poor in execution, are informing. One entitled "Map of the Boone's Lick Road and the Old Santa Fé Trail" is based upon data from a diary kept by Dr. David Waldo, who was a freighter on the trail as early as 1847. The battlefield maps relating to the Mexican War are based on originals prepared by the engineers of the War Department. The photographs include pioneers, soldiers and legislators who achieved prominence in New Mexico.

LEON DOMINIAN.

**New Trails in Mexico.** By C. Lumholtz. xxv and 411 pp. Maps, ill., index. C. Scribner's Sons, New York, 1912. 10 x 6½.

These geographical and ethnographical notes are a valuable contribution to our knowledge of the region near the United States-Mexico boundary between 110° and 115° W. This was the Papaguería of early Spanish chroniclers. It is peopled to-day by Indians whom the casual traveler would hardly differentiate from Mexicans either in Arizona or in Sonora. It is therefore interesting to find in this book a detailed account of the life and peculiar customs of these people.

Mr. Lumholtz seems to have won the confidence of the Papagos. My own recollection of them along the eastern boundary of this district is that they are unusually diffident. Mr. Lumholtz scored signal success in having been

\* Review of Vol. I, in *Bull.*, Vol. 44, April, 1912, pp. 295-296.

able to witness such ceremonies as the preparation of sahuaro wine and to visit primitive graveyards from which the ordinary traveler is excluded.

The marvelous adaptation of plant and animal life to arid environment is investigated by the author. The cacti are shown to be luscious retainers of moisture. This explains how cattle can roam for months away from water in regions where some varieties of this plant thrive. I remember seeing thirsty Indians on a journey near San Carlos in western Oaxaca rip open one of these cacti and munch the broad flat segments with evident relish. It was my first intimation of the value of the moist sponge-like tissues of which the plant is made.

Facts of economic importance are not only recorded as such but the explorer has also been concerned with their investigation. He dwells especially on irrigation and mining possibilities. A final touch of thoroughness is thus imparted to his conspectus of the region. It is to be hoped that he is not over sanguine regarding occurrences of gold in the Papagueria. I have not examined the district south of Sonoita or the northern part of the Pinacate field, but my attention was called to the region in 1905 on a trip from Cananea to Bacoachi. Reports of prospectors tended to show that some placer mining had been carried on formerly. Mr. Lumholtz probably refers to it when he says that: "free gold which undoubtedly has been encountered in the malpais in the northern part of Pinacate should also be followed up."

The maps are valuable. The corrected course of the Sonoita River, the delineation of the shores of the Bay of Adair and the ascription of names to the N-S ranges of the region are features of interest. The distribution of the sand dunes surrounding Adair Bay is indicated. LEON DOMINIAN.

**Field Days in California.** By Bradford Torrey. 235 pp. Ills., index. Houghton Mifflin Co., Boston, 1913. \$1.50. 7½ x 5.

Bradford Torrey died a year ago and this is the twelfth and the last of his delightful books. He loved the out-of-doors, lived much in the open; and his gift of observation and entertaining way of telling about nature, its birds and beasts, trees and flowers, made his graphic sketches well worth while. His last book is fully worthy of his reputation.

**The Different West as Seen by a Transplanted Easterner.** By Arthur E. Bostwick. 184 pp. Index. A. C. McClurg & Co., Chicago, 1913. \$1. 8 x 5½.

The "West," as defined by Mr. Bostwick, comprises the states usually designated as the "Middle West." The author writes in detail of this West, taking up the physiography, towns, cities, transportation facilities, life and customs of the people, politics, economics, education, literature, science, art, society, etc. The East is compared with the West, and the "mutual misunderstanding" existing between them is set forth and discussed.

In his chapter on Literature in the West, the author suggests that "There would appear to be a field in the West for the purely local magazine, which is as yet almost untrod. There might be at least one of these in each state, devoted to the description and discussion of local industries, civic improvement, rural conditions, state history and biography, power-development, etc." Mr. Bostwick writes in a bright and interesting style, and his book is well worth reading. WILBUR GREELEY BURROUGHS.

**A Naval History of the American Revolution.** By Gardner W. Allen. Vol. I: xii and 365 pp. Maps, ill. Vol. II: viii and pp. 367-752. Maps, ill., index. Houghton Mifflin Co., Boston and New York, 1913. \$3. (2 vols.) 8 x 5½ each.

With painstaking research the author has made the most of his subject, one of peculiar difficulty, since the American revolutionists were always struggling toward a navy rather than in possession of one. The condition was essentially inherent in the nature of the case. An unorganized community struggling to cast off a government organized against it may with minimum difficulty assemble its volunteer levies, but sea power can never be aught but the possession of an organized state; it represents the plant of a going concern, it can-

not be constructed overnight. That was the plight of the American colonies. In their revolution the sea was organized against them. Seamen volunteers, comparable to the Minute Men of Lexington, could do no more than annoy the enemy's commerce; before even the weakest frigate of the King's navy they must take to flight. The effort of the Congress to build ships, to assemble fleets, to create a navy is pathetic in its record of futility. It is that record which is faithfully set before us in this work.

**An Economic Interpretation of the Constitution of the United States.** By Charles A. Beard. viii and 330 pp. Index. The Macmillan Co., New York, 1913. \$2.25. 9 x 6.

A contribution to the study of the economic ideas and influences that were potent in the formation of our Constitution. It is by no means exhaustive; and the author in his preface calls it fragmentary; but he was the first to use the records of the Treasury Department in connection with a study of the formation of the Constitution; and he expresses the hope that his work will help to turn scholars to further study of the real economic forces that influenced the shaping of our fundamental law. The archives of the Treasury Department and other records supply a field for many years of research along this line of investigation.

**A Summer and Winter on Hudson Bay.** By C. K. Leith and A. T. Leith. 203 pp. Ills. Cantwell Printing Co., Madison, Wis., 1912. \$2.50. 9½ x 6½.

This book fills a gap in the literature of the Hudson Bay region. Professor Leith and his party traveled about 1,000 miles from Missinaibi, Ont., on the Canadian Pacific R.R. to the south end of James Bay and along this shore and the east coast of Hudson Bay to Richmond Gulf. They visited the Hudson Bay Company's posts at the mouths of the Moose, Rupert, East Main, Big and Great Whale Rivers. They observed the workings of the Company and of its new competitors, Revillon Frères, the life of the Indians and Eskimos, their relations with the two trading companies and with each other. In this region the fur trade, consisting chiefly of fox skins, alone interests the companies. The Indians and Eskimos are their workmen and hunters.

That extensive coastal region being one of the most isolated and least-known areas in North America gives additional value to this competent account of things and events within it. Professor Leith published the geological results of the trip in *Economic Geology* in 1910. It was worth while to add this narrative of the region traversed. The numerous photo-engravings of trading posts, natives and scenery, are a valuable feature.

## SOUTH AMERICA

**Modern Argentina.** The El Dorado of To-Day with Notes on Uruguay and Chile. By W. H. Koebel. xv and 380 pp. Ills., index. Dana Estes & Co., Boston, 1913. \$3.50. 9 x 6.

Essentially a book of pictures—many well chosen but badly reproduced photographs, and even more admirable word pictures of modern life. The author regards Buenos Aires, city and province, as the Argentine Republic; so do the Buenos Aires people themselves, yet it is only in the interior provinces that one meets the creole Argentine, who is after all still dominant in the republic. For Buenos Aires is more wonderful as a "melting pot" even than our own country, though we have no such disproportion of foreigners as they; but the children of all are *Argentines*. Even the son of that conservative being, the Englishman, is an Argentine, speaks Spanish, not English, and visits Paris when he goes to Europe rather than London! The "boom" is recognized in Buenos Aires, but the fertile soil, still far from occupied, is there. Collapse is not possible. A great future is before the country. However, alfalfa was not introduced 18 years ago; it abounded in 1883, only not in the Buenos Aires Camp. Grain-growing is not so new; the reviewer passed through an almost continuous field of maize, 200 miles long, in 1889. The

Argentines are not unused to open air cafés, except in Buenos Aires; nor is drunkenness so uncommon, at least among the peons, as might be desired. It is not sound to call this an account of the Republic, but for the important Buenos Aires Province it is admirable.

MARK JEFFERSON.

**Hunting Extinct Animals in the Patagonian Pampas.** By Frederic Brewster Loomis. 8th Amherst Expedition, 1911. x and 141 pp. Ills. Dodd, Mead & Co., New York, 1913. \$1.50. 9 x 6.

A good and profitable book for anyone's perusal. This much might be expected from a scientific specialist even though he writes, as in this volume, for the larger public whose interest is chiefly in the general geographical features of Patagonia and the life of the settlers. The book includes a broad and popular summary of the results of the expedition. Professor Loomis expects next year to describe in another volume his fossil collections and the results of explorations.

**In Foreign Fields.** Sketches of Travel in South America and Western Europe. By Joseph E. Wing. 549 pp. Ills. *The Breeder's Gazette*, Chicago, 1913. 8 x 5½.

In 1911 the author was sent by the Department of Agriculture to investigate the sheep industry in Argentina. In the prosecution of this duty he communicated to the *Breeder's Gazette* these travel notes. They are very simple and naïf, a great country interpreted in terms of fleece and shepherds. Yet Mr. Wing has set down in these notes a series of pictures of Argentina which it would be difficult to parallel from any other source. He began his researches at Punta Arenas in the Straits of Magellan. From the straits he followed the sheep up the forbidding Patagonian coast to the fine grass pasturage of the pampas. His northern limit was at Corrientes. Before leaving South America he included in his task a similar survey of Uruguay. His book has a very direct address to flockmasters, but the general reader will find much of wider value in the very simplicity of his record of the conditions of soil and climate upon which the sheep industry is based and his narrative of the conditions of life among the shepherds and flockmasters of the great Argentine estancias.

WILLIAM CHURCHILL.

## AFRICA

**La Libia.** Di G. Ricchieri. 144 pp. Maps, ill., index. Federazione Italiana delle Biblioteche Popolari, Milan, 1913. L. 1.50. 6½ x 4½.

A good elementary description of an imperfectly known region. Although primarily intended for young students, its perusal will well repay any of the author's countrymen. The methodical subdivisions of the text appeal readily to trained minds and will help young students systematically to arrange Libya in their thought. Excellent maps and illustrations accompany the text.

**Die Sprachen der Hamiten.** Von Carl Meinhof. Nebst einer Beigabe: Hamitische Typen, von Felix von Luschan. xv and 256 pp. Map, ill. *Abhandl. Hamburg. Kolonialinst.*, Vol. 9. L. Friederichsen & Co., Hamburg, 1912. Mk. 12. 11½ x 8.

There is just as much reason for the employment of the term Hamitic as there is for the use of Semitic; every argument which has warranted the rejection of the term Japhetic applies equally to the disuse of Hamitic; the three are based upon the same point of an alien hero myth; the employment of either is partly personal choice and partly common accord. If it is to be retained, however, its application must be sharply delimited, a task which Prof. Meinhof has brilliantly accomplished in this work. In its first employment it included all the black races of Africa and elsewhere, then it was restricted to all the African races. Dr. Meinhof further limits it to the clear-hued, curly-haired people of Africa, not negroes but in contradistinction exhibiting a relationship with the Caucasian race despite all manner of negroid contamination and somatically indicating kinship with the Semites. After presenting a satisfactory grammatical analysis of the languages of the Ful, the Hausa, the Shilh,

the Bedauye, the Somali, the Masai and the Nama, Prof. Meinhof presents the following conclusions, with which we are quite compelled to agree.

The Hamitic languages differ in use and principle from the Sudan speech, and such apparent agreement herewith as grammar and vocabulary exhibit are due to contamination through loan.

The Hamitic languages constitute a speech-form which in structure shows affiliation with both the Semitic and Indo-Germanic tongues, and where it varies from both it shows a position nearer the Semitic.

That there is some manner of relationship between Hamitic and Bantu languages is not to be denied, as it is not to be forgotten that in the Bantu there is a speech element which indicates affiliation with the Sudan type.

In the interpretation of these three important conclusions I incline to go a step beyond Meinhof. It seems to me that he has established for his Hamitic tongues a position at the most early stage of agglutination and thus detects community of type with the other languages of agglutination (a position nearer the Semitic) and with the earlier forms of the inflected Indo-Germanic.

WILLIAM CHURCHILL.

**Vom Mittelmeer zum Nordrand der Sahara.** Eine botanische Frühlingsfahrt nach Algerien. Von Dr. M. Rikli und Dr. C. Schröter. 178 pp. Ills. O. Füssli, Zürich, 1913(?). 10 x 6½.

The record of a botanical exploration of that arable strip of Algeria which lies between the Sahara and the sea, a trip in spring time when the desert might be expected to blossom as the rose. The flora studied under these favorable considerations is correlated with the climatic factors which constitute the aerial influence and with the structural geographical and underlying geological factors that constitute the telluric influence which determines the vegetation of the region. To these studies have been added brief but noteworthy chapters by C. Hartwich upon Algerine dye stuffs and eye-cosmetics, by O. Schneider-Orelli upon the parasitic fungi, by Mathilde Schneider-Orelli on the plant-galls, and by L. Rüttimeyer on certain archæological materials.

**La Politique indigène de l'Angleterre en Afrique Occidentale.** Par Emile Baillaud. xxxix and 560 pp. Hachette et Cie, Paris, 1912. Fr. 7.50. 9 x 5½.

A map might well have been inserted to facilitate orientation. Where such a number of countries, peoples and tribes are concerned, graphic geography becomes very desirable. The work is to be commended as the result of prolonged personal experience and observation and for its impartiality. While giving credit to England and its representatives in western Africa for shrewdness and practical sense, the means employed are often criticized by the author. Towards the aborigines, he affirms, humanity has frequently been invoked to excuse measures that were not humane, but the outcome has always been an extension of British power which, frequently, has resulted in benefiting the natives.

AD. F. BANDELIER.

**Missions dans le Katanga.** I: Le Commerce au Katanga: Influences Belges et Étrangères. Par G. de Leener. xviii and 143 pp. Ills. Fr. 3. II: L'Agriculture au Katanga: Possibilités et Réalités. Par A. Hock. 305 pp. Map, ills. Fr. 3.50. Institut Solvay, Brussels. Misch & Thron, Brussels & Leipzig, 1912. 7½ x 5.

L'Institut de sociologie Solvay is promoting research relating to sociological topics and is publishing the results of these studies. During 1909-1910 it sent two experts into the southeastern part of the Belgian Congo known as Katanga to investigate its commercial and agricultural possibilities. These two volumes contain the results of this work. The studies are especially timely because a part of Katanga is one of the great future sources of copper now developing and because a part of the plateau stands so high above the sea that Belgian colonists, under certain restrictions, are invited to settle there as farmers. Both books are full of information.

Mr. de Leener finds that Katanga, though a part of the Belgian Congo and administered by Belgian officials, is commercially tributary to British South



Africa and completely dependent upon it for its imported supplies because the import trade in the British domain is large and well-organized and has direct rail communication with Katanga. This condition must persist till Belgian trading interests are linked with those of Katanga by adequate transportation routes, and even then it may not be easy to overcome the preponderance in the business affairs of the province which British South Africa has attained. Among the author's many suggestions he proposes that British South Africa be taken as a model upon which to shape commercial and manufacturing development in Katanga.

The volume by Mr. Hoek is a very instructive discussion of agricultural possibilities and prospects in which he treats of climate, soils, the prospects of raising paying crops, domestic animals, native labor, etc. He has no illusion as to the task before the pioneer farmer. Men of uncommon fiber are needed to turn that wilderness into gardens and fields. Still, many of the European grains, root crops, and garden products can be raised, also a considerable variety of the domestic animals, though the problem of protecting cattle and horses from the fatal bite of the tse-tse fly is still to be solved. This is the most systematic and thorough book that has yet been written on any regions in tropical Africa that are believed to offer opportunities for settlement by the white races.

**History of the Basuto, Ancient and Modern.** Compiled by D. Fred. Ellenberger, and written in English by J. C. Macgregor. xxii and 396 pp. Map, ill., index. Caxton Publishing Co., London, 1912. 7s. 6d. 9 x 6½.

To the extent that this narrative is a record of Basuto history the volume is extremely welcome. The author is intimately acquainted with the tribe, he has had the advantage of friendship upon the most familiar terms with aged chiefs who were willing to communicate to him of their stores of knowledge of the past. There results a narrative which will be found of great value as a check upon the Boer and British accounts of the conquest of South Africa.

The chapter upon the manners and customs of the Basuto is of a lower order, in fact disappointing. The author is not content to make a record of things seen. His observation appears to have been colored by prejudice and he suffers from one constant and very grave error of method. All customs which seemed to him out of harmony with the customs of modern Europe he has set in comparison with the non-European culture with which he was most familiar, namely that of the earlier Semitic record. Observation and this unconscious interpretation are so involved that this material must be used with extreme caution. This preconception is made most manifest in Ellenberger's research after the remote history of the Basuto, as in this statement: "But, and this is remarkable, the women who wear the national dress wear under it round the loins a girdle of twisted grass called the *thethana*, which word may be derived from the Hebrew *thanah*, the fig tree, of the leaves of which Adam and Eve made themselves aprons." He deals similarly with the Bushmen (Baroa). Disregarding the somewhat extensive literature which collates the relation of the Baroa with the prehistoric man of Europe and western Africa, he extends pages in proof of the derivation of this pygmy people from the Canaanites of Mount Hor who were dispossessed by Esau when he took possession of Mount Seir. However this may be, the volume appears under the auspices of the Basutoland government, therefore its modern chapters must be assumed to have value.

WILLIAM CHURCHILL.

**In the Shadow of the Bush.** By P. Amaury Talbot. xiv and 500 pp. Map, ill., index. W. Heinemann, London. George H. Doran Co., New York, 1912. \$5. 9 x 6½.

The "bush" in this book is in southeastern Nigeria with a small section of the Kameruns between the Cross River and the Gulf of Guinea. Here the author finds a people, the Ekoi, which have not come into contact with civilization and thus they retain their ancient habits. The writer transcribes many tales and traditions which illustrate nearly every phase of Ekoi life. The book is largely a record of social and religious customs. One of the remarkable features is the existence of secret societies which dominate the whole

country. Of these, the Egbo, a well-organized club in many respects more powerful than the Government, extends its freemasonry throughout the land of the Ekoi. Clubs of this nature seem to have been original with these people, but many neighboring tribes perceiving the advantages of a union have copied the plan. The religion of these people, their belief in metamorphosis and divination, their customs at births, marriages and funerals, and their arts and methods of recording are described in detail. The appendices contain information on the language of the Ekoi and notes on the botany, mineralogy, meteorology and zoology of the land. Altogether the book is a valuable record of a people and a land little known and liable to be changed easily by contact with foreign conditions.

ROBERT M. BROWN.

**Thinking Black.** Twenty-two Years Without a Break in the Long Grass of Central Africa. By D. Crawford (Konga Vantu). xvi and 484 pp. Map, ills., index. Morgan & Scott, Ltd., London, 1912. 7s. 6d. 9 x 6.

The events of a journey from Benguela in Angola eastward across the Portuguese colony and Katanga to Luanza on Lake Mweru near the Rhodesian border, together with the thoughts and life of a missionary during twenty-three years in South Africa form the theme of the book. The author is a keen observer and especially a philosophical interpreter of the life that reveals itself to him, so that the book imparts valuable information, but a cumbersome style with many side references make the reading a real task.

ROBERT M. BROWN.

**"Verb. Sap." on Going to West Africa, Northern Nigeria, Southern Nigeria, and to the Coasts.** By Capt. Alan Field. 251 pp. Maps, ills., index. Bale Sons & Danielsson, Ltd., London, 1913. 2s. 6d. 7 x 5.

A new edition of a useful book of information for travelers to the west coast of Africa. The author has included in the volume every scrap of advice that in his opinion has merit and he presents it in concise and frequently in amusing phrases. His dicta are valuable to others than prospective visitors to the Gulf of Guinea and especially to such as desire a knowledge of the existing conditions in a region known as "the white man's grave." The preparations for entering the countries and the cautions necessary while there are criteria of nearly every phase of the physical and organic features of the tropics.

ROBERT M. BROWN.

**Les Touareg.** Par Capitaine Aymard. 242 pp. Map, ills. Hachette et Cie, Paris, 1911. 7½ x 5.

Beyond a doubt it is quite as well that the author of this most agreeable little volume has not felt it incumbent upon him to solve the problem of the origin of these veiled camel riders of the desert. He does adopt the theory that they are Berber, a determination by no means conclusively established. He cites the several theories which have been proposed. In one theory the original home of Tuareg-Berber is placed at the delta of the Nile. In another, still in conjunction with the Berber, the Tuareg are assigned to the race of Cro-Magnon. Older theories assign the origin to Yemen at the tip of Arabia, or to Palestine in the time of Goliath. Assuming as at least probable the affiliation of the Berbers with the prehistoric man of western Europe, not necessarily specifying Cro-Magnon as a particular horizon, there seems good reason to deal with the Tuareg ancestors as of independent source and to regard the community which now exists as resultant from affiliation during the indefinite period of contact in the present site. For the current period of the Tuareg this work will be found invaluable. Captain Aymard has fought them, has lived with them, has followed the trail of their swift camels to remote nooks of the desert. His narrative of their life is vivacious and filled with interest. He has set down a fresh record which will be of the utmost service to systematic ethnologists.

WILLIAM CHURCHILL.

**Livingstone and Newstead.** By A. Z. Fraser (Alice Spinner). xiii and 263 pp. Ills., index. John Murray, London, 1913. 10s. 6d. 9 x 6.

On the threshold of his great career, Livingstone met in South Africa

W. F. Webb, a wealthy Englishman, to whom the missionary was kind and helpful. Mr. Webb and his accomplished wife were in time numbered among Livingstone's dearest friends, and it was in their home, in 1863-1864, that the explorer and his daughter Agnes spent eight of the happiest months of his life. This palatial home was Newstead Abbey, famous earlier as the home of Lord Byron. Here Livingstone lived on his second and last return to England while writing one of his books; and here were forged bonds of friendship that linked the Webb family with the explorer and with all men and things that were part and parcel of his subsequent career.

This book, written by one of the daughters of Mr. Webb, tells with tact and delicacy and with fine descriptive power, of phases of Livingstone, of his characteristics, his work; of his wife and children; of great men who came into his life like Murchison and Stanley; and of humble blacks like Susi and Chumah, whose names will live. No one could have written the book lacking the opportunities the author possessed even from childhood. All who love Livingstone for the gentle, great man he was and for the potent influence he still is in the uplifting of Africa will be glad to read this interesting and intimate account of some aspects of the man concerning which not much has been written.

**Premier Voyage du Sieur de la Courbe fait à la Coste d'Afrique en 1685.** Par P. Cultru. Iviii and 319 pp. Map. *Soc. de l'Hist. des Colonies Françaises.* É. Larose, Paris, 1913. Fr. 12. 9½ x 6.

This is a story of adventure in an adventurous era which it must have been a joy to edit. M. Cultru had the rare good fortune to discover the manuscript which had remained unpublished for more than 200 years, half in the National Library in Paris among the forgotten loot of an ancient convent, the other half in the national archives among the unused débris and roughly assigned to the West Indies in a wrong classification. When the editor brought the two fragments together he found that except for sixteen pages at the beginning of the second fragment he had a most vivid narrative of the early commercial settlement of the region of the Senegal and Gambia Rivers. It abounds in interest, it reads with the life and spirit of Robinson Crusoe with only this difference, that Defoe was writing upon material derived from another and the vivacity of the tale shows his skill as a writer while La Courbe is writing at the first hand upon his own experiences. This volume will serve to correct the statements of Father Labat, for it is now discovered to be the source from which that fiery monk has drawn without credit. The Sieur de La Courbe writes with simple force in very direct statement and journalizes his daily life when upon that coast, not a philosopher of history but a shrewd observer with a decided gift for accuracy and a zeal to test what he sees and hears. He is altogether a credit to his profession of seafaring, a good merchant adventurer. We shall not be surprised if his narrative attains a wide currency when some general publisher discovers it and rescues it from the obscurity of the scientific auspices under which it has been brought to light. In an English translation it should prove very successful.

WILLIAM CHURCHILL.

## ASIA

**The Coal and Mineral Resources of Shansi Province, China.** Analytically examined by Erik T. Nyström. 97 pp. Map, ill. P. A. Norstedt & Söner, Stockholm, 1912. 9½ x 6½.

A further step in advance in our knowledge of China's vast coal resources. His own explorations and the facilities conferred by his position as head of the Faculty of Science at Shansi Univ. enabled Nyström to find that areas of anthracite and bituminous coals are not so well defined as Richthofen had maintained. He points instead to regions of future yield as centering around Tse Chou and Ping Ting for anthracite, while bituminous coals are shown to spread widely in the northern and western sections of the province. As to their quality, the assays generally reveal higher ash content than in British coals.

The author also says that iron occurs frequently and that its quality lends

itself to easy treatment. The information on coal and iron is supplemented by that on various ores, so that the distribution of the mineral resources of the province is exhaustively indicated. In view of the large reserves, the province is destined to become eventually one of the world's most important mining regions.

**Les Chemins de Fer de Chine.** Par Edouard de Laboulaye. Préface de M. Robert de Caix. 340 pp. Map. Émile Larose, Paris, 1911. 9 x 5½.

In a preface which is truly introductory, M. de Caix points out how important it is to have works of this character to rescue the reading public from the news despatches of the press. It is a besetting sin of daily journalism, inherent in its quotidianism, that it supplies day by day all the information it can acquire and must trust to the interest of its readers to adjust these "kilometers of special despatches," as he designates them, to the real movement of daily history. This is particularly true of the news of the Middle Kingdom, a community in which fact is inextricably involved with unfamiliar canons of interpretation. In this volume M. de Laboulaye has established our knowledge of the railroad question of China upon a sound basis. After a concise history of the early attempts to introduce steam land communication in China, he takes up the discussion of each of the existing lines and of each of the projects which have shown viability. In each such unit of the theme he follows an excellent method: the history of the negotiations, the construction of the permanent way, the length of line in operation with all necessary details of equipment, the traffic handled, the extensions projected, and at the end the full text of the agreement with the Chinese government under which the road has been built and operated. The work is complete up to the beginning of the new Republic. In this newest era we note as supplementary information that one of the first acts of Yuan Shih-kai was to assign the whole railroad question to Sun Yat-sen. The latter seems to have done little with the project, and when he became engaged with the revolt of the southern provinces Yuan reclaimed the control of the railroad development plan into his own hands.

WILLIAM CHURCHILL.

**Old China and Young America.** By Sarah Pike Conger. 160 pp. Ills. F. G. Browne & Co., Chicago, 1913. 75 cents. 7½ x 4½.

A half of this little volume contains the odds and ends of recollections of Chinese life which Mrs. Conger had not thought it necessary to include in her more serious record of her share in China when the Boxer riots imperilled life in the legations. These simple tales are addressed to children and in that fact lies their value for the student of the life of the Middle Kingdom. The best of us are but children when we come into touch with the ancient civilization of that oldest of human empires and youngest of republics. The simpler the tale which comes from the yamen and the temple the more we learn; even this modest book has that within it which will better our knowledge.

**Sibirien.** Eindrücke und Betrachtungen aus Natur und Politik. Von A. Stirne. vi and 116 pp. O. Wigand, Leipzig, 1912. Mk. 2.40. 8 x 5.

This little volume is a popular manual, a primer of Siberia. We can most readily comprehend its usefulness as the travel companion of those who make the long journey on the Trans-Siberian railroad; moreover, we recall few compendiums which contain anything like the amount of interesting and valuable information which is packed away in these pages. Under a series of concise statements of history and geography, through carefully selected massing of statistical information, the author has developed a central theme which may be described as the Revenge of Europe. Siberia was the home of some of those fierce hordes which once and again devastated Europe and fell little short of overthrowing its culture. Today it is the seat of the great movement backward of colonization which Russia is establishing toward the Pacific, a folk movement to which little attention has yet been given. The natural resources of the most prolific area of Asia are being exploited and there is arising a new and important market for the manufactured products of western Europe. Rus-

sia is still on the agricultural plane and cannot begin to meet these new demands, but Germany, clamoring for a world market for its modern industrialism, hopes to enter this new field with all the advantage of proximity. Such a book as this will prove of great value to the masters of German trade, who are never blind gropers for new outlets.

**Big Game Shooting in India, Burma, and Somaliland.** By Colonel V. M. Stockley. xii and 282 pp. Ills. Horace Cox, London, 1913. 21s. 10 x 7.

In the first chapter are descriptions of India, Burma, and Somaliland, giving for each the general physiography, climate, distribution of game, and directions for the organization and plan of campaign of hunting expeditions. The author next considers the lion of Somaliland, telling of his habits and various methods used in hunting him with detailed directions regarding the proper methods based upon personal experiences. The chapter on the lion is concluded with an account of a number of Col. Stockley's own shooting adventures, as well as those of other sportsmen, each episode illustrating the dangers encountered and precautions necessary.

Other big game animals discussed in a similar manner are the tiger, leopard, Himalayan brown bear, Himalayan black bear, Indian bear, Asiatic elephant, Indian buffalo, yak, Himalayan ibex, deer, antelope, and lastly the Indian boar, with an account of the art of pigsticking. There are numerous illustrations, including diagrams showing the tracks of the various animals described, etc. The book should be of value to those interested in the pursuit of big game.

WILBUR GREELEY BURROUGHS.

**India and the Indians.** By Edward F. Elwin. xi and 352 pp. Ills., index. John Murray, London, 1913. 10s. 6d. 9 x 6.

The author is an English missionary who describes in this volume many aspects of the daily life of the common people of India. His long residence among them has fitted him to tell more of the inner side of Indian life and character than we find in many books on the peoples of that country. The work is wholly the outcome of his own personal observations. It will repay perusal.

**Nachrichten über den Aral-See und den unteren Lauf des Amudarja von den ältesten Zeiten bis zum XVII. Jahrhundert.** Von Dr. W. Barthold. Deutsche Ausgabe mit Berichtigungen und Ergänzungen vom Verfasser. Nach dem russischen Original übersetzt von H. von Foth. xiii and 78 pp. Map. Series: Quellen und Forschungen zur Erd- und Kulturkunde, Vol. 2. Otto Wigand, Leipzig, 1910. 10½ x 7.

Did the Oxus flow into the Caspian from the thirteenth to the sixteenth centuries? Dr. Barthold is sure it did. He has new historic evidence and believes that the principles of historical criticism alone provide the criteria for decision. Substantially the course indicated on Sheet 61 of the 9th edition Stieler was the ancient one, with falls or rapids in the Usboj near Janydscha. The mouth of the Oxus (Amu-darja), however, was only a mile beyond the railroad near Aidin, the Caspian then having a great bay to the east. His paper is unnecessarily long and not very clear. MARK JEFFERSON.

**The First Grammar of the Language Spoken by the Bontoc Igorot.** With a Vocabulary and Texts, Mythology, Folk-Lore, Historical Episodes, Songs. By Dr. Carl Wilhelm Seidenadel. xxiv and 588 pp. Ills. Open Court Publishing Co., Chicago, 1909. 11 x 9.

This work falls apart in the middle. The second part, the vocabulary of this wild folk of northern Luzon, will be found of great value to all students of Philippine speech. The former part, involved disquisitions upon the grammar of the speech, will undoubtedly require revision when brought into comparison with other languages of the type. The author shows no acquaintance with other of the Malayan agglutinative tongues, therefore he is not familiar with the established system of the grammar of that class of speech. In collating this vocabulary of the Bontoc, provisionally classed as a negro and

therefore pre-Malayan folk, I have identified ninety vocables held in community with the Subanu of southern Mindanao in the Visayan speech area, and sixty of these vocables lie within that common element which the Malaysans have assumed from the isolating Polynesian. I have devoted a volume to the consideration of the position of the Subanu. As for the Bontoc I derive the impression that they have been at least in prolonged contact with the first swarm of Malayan migration upon the Philippines, that they may represent a survival of that migration, or, if they be ethnically negrito, that they have carried with them into their mountain homes this Malayan baggage.

WILLIAM CHURCHILL.

### AUSTRALASIA AND OCEANIA

**Australia for the Emigrant.** By N. Keith Bushell. x and 96 pp. Ills. Cassell & Co., Ltd., London, New York, 1913. 1s. 8½ x 5½.

Nearly 200,000 people emigrate from England to Australia every year. Many of these people have staked their all on the venture. Many imagine Australia to be a Paradise, with congenial work and plenty of money for everyone. But after a few weeks the emigrant awakens to the grim realities of the situation. It may be that his previous training exactly fits him for a trade for which there is a great demand in the new land; on the other hand, his work in England may have been along lines for which there is no call in Australia. Bearing these facts in mind, the author describes the varying industries of the different sections of Australia, pointing out those occupations in which Englishmen are likely to succeed. The advice given is conservative, and anyone contemplating emigrating to Australia will do well first to read this book.

WILBUR GREELEY BURROUGHS.

**American Samoa.** A General Report by the Governor. 40 pp. Ill. [Secretary of the Navy], Washington, D. C., 1913. 9 x 6.

Apart from the tangle of foreign relations the official library of America in Samoa has but few titles. The United States has printed the report of Col. Steinberger in 1874, a valuable compend of information upon the natural resources of the islands. My immediate predecessor, Consul-General Mulligan, made a report in a tone of very bitter disenchantment. My own despatches to the Department of State, my personal reports to President Cleveland, were essentially political and diplomatic, they involved so intimately the settlement of the Samoa question by our acquisition of Tutuila and Manu'a that it was not advisable to publish them at the time. I made no general report upon the islands, and it is only now that my special studies in the philology and ethnology of Samoa are taking shape for publication. This important report by Governor-General Crose completes the brief list. It is most opportune at the time when the government in Washington has definitely acknowledged the existence of an American Samoa and has issued a civil commission to its naval commandant.

This report, though brief, is an important compendium of the essential information concerning Tutuila and Manu'a, statistics of social condition, the government of the island communities, trade and intercourse. It would be difficult to propound a question concerning the several islands and their life for which the answer will not readily be found in these pages. Commander Crose was the seventh of the naval commandants of the station, the first governor to hold a civil commission. His administration of nearly three years has been markedly successful, he succeeded in bringing the finances of the island possession into a stage of great prosperity, above all else he will be remembered for the great work which he accomplished in the extension of educational facilities. It is due to his personal efforts that the first group of young Samoans has been sent to Hawaii for higher study under pledge to return to Samoa and become instructors of their own people. Under his stimulation Samoa for the first time has held what corresponds to a teachers' institute, where ideas were interchanged among the representatives of all the missionary bodies engaged in that field.

WILLIAM CHURCHILL.



## EUROPE

**Vistas in Sicily.** By Arthur Stanley Riggs. xii and 272 pp. Map, ills., index. McBride, Nast & Co., New York, 1912. \$1.10.

The author shows how every great race around the Mediterranean has had, at some time, a part in influencing the language, customs, architecture, and people of this island. The larger part of the book is given to a description of the island as the author saw it. The book will be of much value to travelers or home readers.

WILBUR GREELEY BURROUGHS.

## OTHER BOOKS RECEIVED

*These notes do not preclude more extended reference later*

## NORTH AMERICA

**LAKE ERIE AND THE STORY OF COMMODORE PERRY.** By Edward Payson Morton. The Great Lakes Series. 104 pp. Map, ills. Ainsworth & Co., Chicago, 1913. 25 cents.  $7\frac{1}{2} \times 4\frac{1}{2}$ . [Designed to stimulate observation and accurate thinking among young students of American history.]

**THE MOHAWK VALLEY AND LAKE ONTARIO.** By Edward Payson Morton. The Great Lakes Series. 99 pp. Ills. Ainsworth & Co., Chicago, 1913. 25 cents.  $7\frac{1}{2} \times 5\frac{1}{2}$ .

**THE REPORT OF THE LAWRENCE SURVEY.** Studies in Relation to Lawrence, Mass., made in 1911, under the advice of Francis H. McLean by Robert E. Todd and Frank B. Sanborn at the Procurement of the Trustees of the White Fund. 263 pp. Plans, ills. Trustees of the White Fund, Lawrence, Mass., 1912. 50 cents.  $9\frac{1}{2} \times 6\frac{1}{2}$ . [An economic investigation on housing and the milk and water supply under conditions existing in the type of industrial city surveyed.]

**STRIP MAPS OF THE "SEMINOLE TRAIL" NORTH AND SOUTH AUTOMOBILE ROUTE.** 1: New York, Philadelphia, Baltimore, Washington, Charlottesville, Lynchburg, Danville, Charlotte, Camden, Aiken, Augusta, Savannah, Jacksonville, St. Augustine. 2: Columbia, Orangeburg, Summerville, Charleston. 3: Greensboro, Ashboro, Pinehurst. 80 pp. American Automobile Assoc., New York, 1912. \$1.  $11 \times 4\frac{1}{2}$ . [Touring information with some topographical notes.]

**THE FRAMING OF THE CONSTITUTION OF THE UNITED STATES.** By Max Farrand. ix and 281 pp. Index. Yale University Press, New Haven, 1913. \$2. Postage 20c.  $9 \times 6$ . [The intentions of the framers of the Constitution have been the author's main object of research.]

**SHALL I GO TO CANADA? The Land of Opportunity and Hope.** By H. Hamilton Fyfe. 120 pp. Ills. Associated Newspapers, Ltd., London, 1913 (?). 6d.  $8\frac{1}{2} \times 6$ .

**NEWFOUNDLAND.** By Ford Fairford. In series: Peeps at Many Lands. 12 full-page illustrations in colour by C. G. Lowther. vii and 88 pp. A. & C. Black, London, 1912. The Macmillan Co., New York. 55 cents.  $8 \times 5\frac{1}{2}$ . [Highly educational as descriptions of land and people are accurate.]

## CENTRAL AMERICA AND WEST INDIES

**CROCIERA DEL CORSAROS** (1) San Salvador. 136 pp. (2) Alle Azzorre. 269 pp. Di E. A. d'Albertis. Map, ills. Fratelli Treves, Milano, 1888 and 1898.  $10 \times 6\frac{1}{2}$ . [Brightly written and instructive accounts of leisure cruises.]

**ESTUDIO GEOGRÁFICO, HISTÓRICO, ETNOGRÁFICO, FILOLÓGICO Y ARQUEOLÓGICO DE LA REPÚBLICA DE EL SALVADOR EN CENTRO-AMÉRICA.** Por Dr. L. A. Rodríguez. 173 pp. Antigua Imprenta de Murguía, Mexico, 1912.  $9 \times 6$ . [This survey is brief but will be welcome to Spanish reading students desiring to acquire preliminary familiarity with this republic. The list of Pipilnahuatl words and their meaning is a valuable contribution to Central American philology.]

ANNUAIRE DE LA MARTINIQUE. Année 1912. 680 pp. Maps. Imprimerie du Gouvernement, Fort-de-France, 1912. Fr. 5. 9½ x 6. [Statistical information on the administration and the economic development of the island.]

## SOUTH AMERICA

DESCRIPCIÓN EXACTA DE LA PROVINCIA DE VENEZUELA. Por D. Joseph Luis de Cisneros. Series: Colección de Libros Raros ó Curiosos que Tratan de América, Segunda Serie, Tomo 21. xi and 220 pp. Victoriano Suárez, Madrid, 1912. 3 pesetas. 7 x 4½. [A reproduction of the 1764 edition containing minute descriptions of a number of Venezuelan cities.]

THE WAR OF QUITO. By Pedro de Cieza de Leon and Inca Documents. Translated and edited by Sir Clements R. Markham. xii and 212 pp. Index. The Hakluyt Society, London, 1913. 9 x 6. [The events are portrayed by an eye-witness. Interesting as the record of the attempt of the Spanish government to befriend the Indians at the instance of Las Casas. Completed by an editorial sequel beginning with the assumption of government by Gonzalo Pizarro and extending to the death of the Viceroy at Anaquito.]

ACROSS THE ANDES. By Charles Johnson Post. A Tale of Wandering Days Among the Mountains of Bolivia and the Jungles of the Upper Amazon. 362 pp. Ills. Outing Publishing Co., New York, 1912. \$1.75. 8½ x 6. [Stories of the road with insight into many phases of native life.]

LE GOUVERNEMENT REPRÉSENTATIF FÉDÉRAL DANS LA RÉPUBLIQUE ARGENTINE. Par José Nicolas Matienzo. 380 pp. Hachette & Cie, Paris, 1912. Fr. 4. 7½ x 5. [An able discussion of Argentina's development of governmental forms, the relation between federal and provincial authority and the functions assigned to the executive and legislative branches of the government.]

ORÍGENES ARGENTINOS. La Formación de un Gran Pueblo. Por Roberto Levillier. vii and 324 pp. Plans, ill. Eugène Fasquelle, Paris & Buenos Aires, 1912. Fr. 3.50. 7½ x 5. [Translated from the French.]

## AFRICA

THE GEOGRAPHY AND GEOLOGY OF SOUTH-EASTERN EGYPT. By John Ball. xii and 394 pp. Maps, ill., index. Survey Dept., Egypt. Cairo, 1912. 11 x 8. [Observations in the course of surveys from 1905 to 1908.]

UNA CROCIERA SUL NILO. Khartum-Gondokoro. Di Cap. E. A. d'Albertis. 2nd edition. 263 pp. Map, ill. G. B. Paravia e Comp., Torino, 1911 (?). L. 5. 9½ x 6½. [Much attention to ancient and modern irrigation methods. Information on new irrigation projects.]

IN AFRICA. Victoria Nyanza e Benadir. Di Cap. E. A. d'Albertis. Collezione di Monografie Illustrate. Serie Viaggi. 162 pp. Maps, ill., index. Istituto Italiano d'Arti Grafiche, Bergamo, 1906. L. 5. 10½ x 7½. [Travel notes profusely illustrated with photographs.]

AU CŒUR DE L'AFRIQUE ÉQUATORIALE (Journal de route d'un Officier). Par Capitaine Maurice Martin. viii and 215 pp. Map, ill. Lefebvre-Ducrocq, Lille, 1912. 8½ x 5½. [The narrative of a mission along the Anglo-Egyptian frontier from the source of the Kotto R. to that of the M'Bomu.]

DAVID LIVINGSTONE. By Thomas Hughes. vii and 208 pp. Map, ill. The Macmillan Co., New York, 1908. 75c. 8 x 5. [An instructive account of his work with extracts from his journal.]

LES WANGATA (Tribu du Congo Belge). Étude ethnographique. Par le Lieutenant Engels. 101 pp. Map, ill. Vromant et Cie, Brussels, 1912. Fr. 3.50. 10 x 6½. [Description of the customs and social conditions among the 3,000 inhabitants of the region comprised between the Congo and Ruki Rivers.]

AFRIKFAHRT WEST. Von Hamburg, Antwerpen, Boulogne und Southampton nach Madeira und den Kanarien und über Madeira-Kanarien nach Swakopmund, Lüderitzbucht und Kapstadt. Ein Reisebuch und ein Einführungsbuch.

Von Hans Grimm. 222 pp. Maps, ills., index. Series: Hendschels Luginsland, No. 34. M. Hendschel, Frankfurt a. M., 1913. Mk. 5. 8 x 5½. [Reading rendered attractive through intelligent observation.]

#### ASIA

THE OXFORD STUDENT'S HISTORY OF INDIA. By Vincent A. Smith. 3rd edition. 256 pp. Maps, index. Clarendon Press, London & New York, 1911. 2s 6d. 7½ x 5.

L'INDO-CHINE. Par Myriam Harry. Series: Les Beaux Voyages. 120 pp. Map, ills. Les Arts Graphiques, Vincennes, 1912. 8 x 5½. [Excellent reading for boys.]

LA CITÉ ANNAMITE. Par Camille Briffaut. Tome 1: La Fondation. xi and 172 pp. Fr. 3.50. Tome 3: Les Errants. xi and 81 pp. Fr. 4. Librairie de la Société du Recueil Sirey, Paris, 1909 and 1912. 9 x 5½. [Illustrates the gradual change of opinion in France regarding colonial policy. The author suggests the advisability of directing the floating population towards regions susceptible of agricultural development.]

#### AUSTRALASIA

NORTHERN TERRITORY OF AUSTRALIA. Report on Operations since the Transfer to the Commonwealth. 48 pp. Ills. Dept. of External Affairs, Melbourne, 1913. 8½ x 5½. [An account of progress and information on the natural resources and administrative organization.]

#### EUROPE

SUGGESTIONS FOR INVESTIGATIONS IN HUMAN GEOGRAPHY IN BRITAIN. By H. J. Fleure and W. E. Whitehouse. 28 pp. University College of Wales, Aberystwyth, 1913. 7d. 9½ x 6.

DAS DEUTSCHE DORF. Von Robert Mielke. 2. Auflage. Series: Aus Natur und Geisteswelt, 192. Bändchen. 125 pp. Ills. B. G. Teubner, Leipzig, 1913. Mk. 1.25. 7½ x 5. [Brief history of the development of German villages.]

DIE ORTSNAMEN IM DEUTSCHEN. Ihre Entwicklung und ihre Herkunft. Von Dr. Rudolf Kleinpaul. Sammlung Götschen. 126 pp. Index. G. J. Götschen, Berlin & Leipzig, 1912. 80 pfg. 6½ x 4½. [Origin and history of many geographical names concisely given.]

KREISE UND KREIS-GRENZEN PREUSSENS vornehmlich die Ost-Preussens geographisch betrachtet. Dissertation . . . Univ. zu Königsberg. Vorgelegt von Hermann Gruber aus Lötzen. 1912. 101 pp. 8½ x 6. [A study of district boundaries based on geographical, ethnographical and political considerations.]

HOLLAND OF THE DUTCH. By Demetrius C. Boulger. x and 268 pp. Ills., index. Charles Scribner's Sons, New York, 1913. 6 sh. 7½ x 5½. [A survey of the country and its inhabitants. The influence of Holland's physiographic features upon the customs and history of its people.]

MODERNE GEOGRAPHIE VAN NEDERLAND. Door K. Zeeman. xi and 331 pp. Maps, ills., index. W. Versluys, Amsterdam, 1913. Fl. 2.50. 9 x 6. [Adapted both for ordinary reading and text-book purposes.]

HOME LIFE IN RUSSIA. By A. S. Rappoport. x and 287 pp. Ills., index. The Macmillan Co., New York, 1913. \$1.75. 8 x 5. [This excellent work bespeaks intimate knowledge of the Russians.]

ÜBER DAS STILFSEERJOCH. Landeck-Prutz-Hochfinsternünz-Mals-Spondinig-Gomagoi-Trafoi-Stilfserjoch-Bormio. Von Josef E. Langhans. Hendschels Luginsland, Heft 36. 81 pp. Map, ills., index. M. Hendschel, Frankfurt a. M., 1913. Mk. 1.50. 8 x 5½. [May be classed under the head of guide-books for the more intelligent readers.]

ORIGINES AND FORMATION DE LA NATIONALITÉ FRANÇAISE Éléments ethniques—Unité territoriale. Par Auguste Longnon. 92 pp. Nouvelle Librairie Nationale, Paris, 1912. Fr. 2. 7½ x 4½. [The shaping of France as a nation ascribed to monarchical influences between 987 and 1789.]

IL TERRENO FRA LE DUE CHIANE, I VULSINI, LA COSTA TIRRENA E L'ARNO. Di E. Barbarich. 75 pp. Maps. E. Voghera, Rome, 1912. L. 1.50. 9 x 6½. [A study in military geography of the region of which Siena is the anthropogeographical center.]

UNTERSUCHUNGEN ÜBER DEN GEOLOGISCHEN BAU UND DIE TRIAS IN DER PROVINZ VALENCIA. Inaugural-Dissertation . . . Ruprecht-Karls-Universität Heidelberg. Vorgelegt von Rudolf Ewald. 49 pp. Map, ills. Heidelberg, 1911. 8½ x 5½.

RAVENNA. A Study by Edward Hutton. Illustrated in colour and line by Harald Sund. xii and 300 pp. Index. E. P. Dutton & Co., New York, 1913. \$3. 8½ x 6½. [Deals mainly with the importance of Ravenna in the history of Italy and Europe during the Middle Ages.]

HOME LIFE IN TURKEY. By Lucy M. J. Garnett. xvi and 296 pp. Index. Macmillan Co., New York, 1909. \$1.75. 7½ x 5. [Accurate descriptions of the simple customs of an unsophisticated race. Each page reveals an intimate knowledge of the workings of the Turkish mind.]

RAMBLES AND STUDIES IN GREECE. By J. P. Mahaffy. 7th edition. xii and 439 pp. Index. The Macmillan Co., New York, 1913. 50 cents. 7½ x 5.

#### MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY

ASTRONOMISCHE ORTSBESTIMMUNGEN MIT BESONDERER BERÜCKSICHTIGUNG DER LUFTSCHIFFFAHRT. Von Prof. Dr. W. Leick. viii and 130 pp. Diagrams. Quelle & Meyer, Leipzig, 1912. Mk. 3.50. 9½ x 6½. [A practical treatise on the determination of an airship's position in air. Bibliography.]

GUIDE SCIENTIFIQUE DU GÉOGRAPHE-EXPLORATEUR. Par P. Crépin de Beauregard. x and 250 pp. Map, ills. Gauthier-Villars, Paris, 1912. Fr. 10. 11 x 7½. [The text leads methodically from astronomical and geodetic conceptions to surveying and cartography. Rapid field methods are given.]

ASTRONOMIE IN IHRER BEDEUTUNG FÜR DAS PRAKTISCHE LEBEN. Von Dr. Adolf Marcuse. Series: Aus Natur und Geisteswelt. 99 pp. ills. B. G. Teubner, Leipzig, 1912. Mk. 1. 7½ x 5. [Fundamental notions of astronomy explained. Methods for the geographical determination of position on land, at sea and in the air are given. Handling of instruments described.]

BODENKARTIERUNG UND GEOLOGISCH-AGRONOMISCHE KARTEN. Von Dr. W. Koehne. 32 pp. Landwirtschaftliche Hefte, Heft 5. P. Parey, Berlin, 1912. 80 pfg. 9 x 6. [Discusses the mapping of surface geology for agricultural purposes.]

THE METRIC SYSTEM in all Its Details compared with the American Weights and Measures. By Henry G. Bayer. 94 pp. H. G. Bayer, New York, 1913. 7 x 4½. [A plea for the adoption of this system. Reference to the numerous conversion tables give point to the advantages to be derived by the metric system.]

#### HISTORICAL GEOGRAPHY

OPUSCULOS E ESPARSOS. Por 2º Visconde de Santarem. Colligidos e Ordenados por Jordão de Freitas e Novamente publicados pelo 3º Visconde de Santarem. Vols. 1 and 2. Imprensa Libanio da Silva. Lisbon, 1910. 11½ x 8. [A collection of papers published during the first half of the 19th century. Includes cartographic notes which throw light on some of the author's investigations preliminary to the production of his famous atlas.]

HANDBOOK OF COMMERCIAL TREATIES, &c., between Great Britain and Foreign Powers. Compiled and edited by Gaston de Bernhardt. xxiii and 1153 pp. Wyman & Sons, Ltd., London, 1912. 10s. 9½ x 6½. [Practically the whole world figures in this useful work of reference.]

#### ECONOMIC AND COMMERCIAL GEOGRAPHY

THE THEORY AND PRACTICE OF WORKING PLANS (FOREST ORGANIZATION). By A. B. Recknagel. xii and 235 pp. ills., index. John Wiley & Sons, New York, 1913. \$2. 9 x 6. [A manual of systematic forest management, including approved European methods.]

## METHODOLOGY AND TEACHING

GÉOGRAPHIE À L'USAGE DES CANDIDATS À L'ÉCOLE SUPÉRIEURE DE GUERRE ET AUX ÉCOLES MILITAIRES. IIe Partie: L'Europe-L'Expansion Européenne et la Politique Actuelle. Par Lieutenant P. Boissier. 286 pp. Maps. H. Charles-Lavauzelle, Paris, 1913. Fr. 5. 9 x 6. [Primarily written for the use of applicants for admission to military schools, but also adapted to the needs of college students.]

## GENERAL

AN INTRODUCTION TO EUGENICS. By William Cecil Dampier Whetham and Catherine Durning Whetham. 66 pp. The Macmillan Co., New York, 1912. 35 cents. 8½ x 5½.

CATALOGUE OF THE WAR OFFICE LIBRARY. Part 3: Subject Index. Compiled by F. J. Hudleston. 1962 pp. Index. War Office, London. Harrison & Sons, London, 1912. 10½ x 6½. [A useful compilation for all large geographical collections. The larger part of the entries are geographical.]

## CURRENT GEOGRAPHICAL PAPERS

## NORTH AMERICA

## United States

CLARK, W. B., B. L. MILLER, AND OTHERS. The Coastal Plain of North Carolina. 552 pp. Maps, ills., index. *North Car. Geol. and Econ. Surv.*, Vol. 3, 1912.

CLEMENTS, F. E., C. O. ROSENDAHL, AND F. K. BUTTERS. Guide to the Spring Flowers of Minnesota; Field and Garden. 3d edition. 59 pp. Ills. *Geol. and Nat. Hist. Surv. of Minnesota*. Minneapolis, 1913.

DILLER, J. S. Geological History of Crater Lake. Crater Lake National Park. 31 pp. Maps, ills. Supt. of Documents, Washington, D. C.

ELROD, M. J. Some Lakes of Glacier National Park. 29 pp. Map, ills. Supt. of Documents, Washington, D. C.

HAGUE, A. Geological History of the Yellowstone National Park. 23 pp. Map, ills. Supt. of Documents, Washington, D. C.

HOFFMAN, B. E. Alaska Woods, Their Present and Prospective Uses. *Forestry Quart.*, Vol. 11, 1913, No. 2, pp. 185-200.

HUNTINGTON, E. The Secret of the Big Trees. 24 pp. Ills. Supt. of Documents, Washington, D. C.

LANDES, H. Round About Mount Baker. Ills. *Mazama, a Record of Mountaineering in the Pacific N. W.*, Vol. 3, 1907, No. 1, pp. 5-8. Portland, Ore.

MATTHES, F. E. Sketch of Yosemite National Park and Account of the Origin of the Yosemite and Hetch Hetchy Valleys. 47 pp. Map, ills. Dept. of the Interior, Washington, 1912.

METCALFE, G. The Ascent of Mount Baker. Ills. *Mazama*, Vol. 3, 1907, No. 1, pp. 9-19. Portland, Ore.

PALMER, T. S. Our National Bird Reservations. Maps, ills. *Amer. Mus. Journ.*, Vol. 13, 1913, No. 5, pp. 203-214.

PRIESTLEY, H. I. The Colorado River Campaign 1781-1782. Diary of Pedro Fages. Edited by—. 101 pp. *Public. Acad. of Pacific Coast Hist.*, Vol. 3, 1913, No. 2. Berkeley, Cal.

SPENCER, J. W. Postglacial Earth-Movements about Lake Ontario and the Saint Lawrence River. Map. *Bull. Geol. Soc. of Amer.*, Vol. 24, 1913, No. 2, pp. 217-228.

TARR, R. S., AND L. MARTIN. Glacial Deposits of the Continental Type in Alaska. Map, ills. *Journ. of Geol.*, Vol. 21, 1913, No. 4, pp. 289-300.

- WEED, W. H. Geysers. Map, ills. Supt. of Documents, Washington, D. C.
- WHITE, I. C. Note on a very Deep Well near McDonald, Penn. *Bull. Geol. Soc. of Amer.*, Vol. 24, 1913, No. 2, pp. 275-282.
- WHITNEY, M. Field Operations of the Bureau of Soils, 1910. (12th Report.) 1,772 pp. Maps, ills. Bur. of Soils, Washington, 1912.
- Annual Report of the Philadelphia Museums (The Commercial Museum) for 1912. 28 pp. Ills.
- Explorations and Field-Work of the Smithsonian Institution in 1912. 76 pp. Ills. *Smithson, Miscell. Coll.*, Vol. 60, No. 30, 1913.
- General Information Regarding the Hot Springs of Arkansas. 8 pp. Map, ills. Supt. of Documents, Washington, D. C.
- General Information Regarding Crater Lake National Park, 1913. 11 pp. Maps. Dept. of the Interior, Washington, D. C.
- General Information Regarding Glacier National Park, 1913. 16 pp. Map. Dept. of the Interior, Washington, D. C.
- General Information Regarding Mesa Verde National Park, 1912. 24 pp. Plans. Dept. of the Interior, Washington, D. C.
- General Information Regarding Mount Rainier National Park, 1913. 22 pp. Dept. of the Interior, Washington, D. C.
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- General Information Regarding Yellowstone National Park, 1913. 36 pp. Maps. Dept. of the Interior, Washington, D. C.
- General Information Regarding Yosemite National Park, 1913. 27 pp. Map. Dept. of the Interior, Washington, D. C.
- List of National Park Publications. 26 pp. Map. Dept. of the Interior, Washington, D. C.
- List of References to Publications pertaining to the Government Ownership of Railways. 14 pp. Bur. of Railway Economics, Washington, D. C., 1913.
- Report for 1912 on the Trade of the Consular District of Baltimore (comprising the States of Maryland, Virginia and West Virginia). 42 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5103*, London, 1913.
- Report for 1912 on the Trade and Agriculture of the Consular District of Chicago. 55 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5095*, London, 1913.
- Report for 1912 on the Trade of the Consular District of St. Louis. 18 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5087*, London, 1913.
- Report for 1912 on the Trade, Commerce and Navigation of the Consular District of San Francisco. 29 pp. *Diplomatic and Consular Repts. Ann. Series No. 5068*, London, 1913.
- Report for 1912 on the Consular District of Savannah. 44 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5091*, London, 1913.
- Report for 1912 on the Trade and Commerce of the Consular District of Philadelphia. 44 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5090*, London, 1913.
- The Seismological Society of America. *Bull. Seismolog. Soc. of Amer.*, Vol. 1, 1911, No. 1, p. 28.
- Summer Forest Camp in Adirondacks, August, 1913. 9 pp. Ills. *Bull. New York State Coll. of Forestry*, Syracuse Univ., Series 13, 1913, No. 1c.

## Canada

- BLUMER, J. C. A Glimpse of a Saskatchewan Forest. *Forestry Quart.*, Vol. 11, 1913, No. 2, pp. 172-175.
- FERNOW, B. E. Forest Conditions of Nova Scotia. Ills. *Amer. Forestry*, Vol. 19, 1913, No. 6, pp. 377-389.



**Mexico**

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— Anuario de Estadística Fiscal 1911-12, Republica Mexicana. 379 pp. Secretaria de Estado, Mexico, 1913.

— Report for 1912 on the Trade of the Consular District of Colima. 12 pp. Map. *Diplomatic and Consular Reports Ann. Series No. 5064*, London, 1913.

**CENTRAL AMERICA AND WEST INDIES**

— The Conquest of the Tropics. [By sanitary and hygienic improvement.] Ills. *Bull. Pan Amer. Union*, Vol. 36, 1913, No. 5, pp. 674-684.

SPINDEN, H. J. A Study of Maya Art: Its Subject Matter and Historical Development. 285 pp. Map, ills., index. *Memoirs Peabody Mus. Amer. Archaeol. and Ethnol., Harvard Univ.*, Vol. 6. 1913.

THOMSON, D. Sanitation of the Panama Canal Zone, Trinidad and British Guiana. Ills. *Annals Tropical Medicine and Parasitology*, Vol. 7, 1913, No. 1, pp. 125-146. Liverpool School of Tropical Medicine.

**Cuba**

JENNINGS, O. E. Note on the Geology of the Isle of Pines, Cuba. *Journ. of Geol.*, Vol. 21, 1913, No. 4, pp. 367-369.

— Boletín Oficial de la Secretaria de Agricultura, Comercio y Trabajo. Republica de Cuba. Maps. Año 7, Vol. 13, 1912-13, Nos. 1-6, pp. 1-620. Havana.

— The Great Roque Canal of Matanzas, Cuba. Map, ills. *Bull. Pan Amer. Union*, Vol. 36, 1913, No. 5, pp. 668-673.

**Haiti**

— Report for the Year 1912 on the Trade, Commerce and Navigation of the Republic of Hayti. 15 pp. Map. *Diplomatic and Consular Reports Ann. Series No. 5057*, London, 1913.

**Panama Canal Zone**

ALLEN, H. B. Report on Health Conditions at Panama. 25 pp. Map, ills. Minister of External Affairs, Melbourne, Australia, March, 1913.

BAKENHUS, R. E. The Panama Canal. Maps. *Proc. U. S. Naval Inst.*, Vol. 39, 1913, No. 2, pp. 599-676.

LINDSAY, F. The Timber Lands of Panama. Ills. *Bull. Pan Amer. Union*, Vol. 36, 1913, No. 4, pp. 499-510.

**Santo Domingo**

— Foreign Commerce of the Dominican Republic for 1912. Ills. *Bull. Pan Amer. Union*, Vol. 36, 1913, No. 4, pp. 550-568.

— Report for 1912 on the Trade, Commerce and Navigation of the Dominican Republic. 16 pp. Map. *Diplomatic and Consular Repts. Ann. Series No. 5066*, London, 1913.

**SOUTH AMERICA****The Continent and Parts of It**

DIECK, A. Die Waffen der Naturvölker Süd-Amerikas. 98 pp. Map. Inaugural-Dissertation, Albertus-Univ. zu Königsberg, i. Pr. 1912.

**Argentina**

CLARKE, J. M. El Devoniano de la Argentina Occidental (sobre la base de los materiales recogidos por los Dres. Bodenbender y Stappenbeck). 15 pp. Ills. *Anal. del Minist. de Agric.*, Vol. 8, 1912, No. 2. Buenos Aires.

KEIDEL, H. Die neueren Ergebnisse der staatlichen geologischen Untersuchungen in Argentinien. Reprint. *Compte Rendu du XIe Congrès Géol. Intern.*, Stockholm, 1910, pp. 1127-1141.

KÜHN, F. Beiträge zur geologischen Erforschung Argentinien. *Zeitschr. Gesell. für Erdk. zu Berlin*, 1913, No. 6, pp. 471-474.

— Informe sobre una Exploración Geológica en la Región de Orán (Provincia de Salta). 13 pp. Map. Reprint, *Bol. Minist. de Agric.*, Vol. 4, No. 4-5. Buenos Aires, 1906.

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## NEW MAPS

EDITED BY THE ASSISTANT EDITOR

For system of listing maps see p. 75 of this volume

MAPS ISSUED BY UNITED STATES GOVERNMENT BUREAUS

U. S. GEOLOGICAL SURVEY

Maps Accompanying Publications

**Montana.** (a) Topographic Map of the Philipsburg Quadrangle, Montana, Showing Location of Mines, 1912. 1:125,000. 46°30' - 46°0' N.; 113°30' - 113°0' W. 2 colors.

(b) Geologic Map and Sections of the Philipsburg Quadrangle, Montana. Geology by F. C. Calkins, assisted by D. F. Macdonald, W. E. Wrather and J. T. Pardee. Surveyed in 1906-09. Same scale and coordinates as (a). 33 colors.

Accompany, as Plates II and I, respectively, in pocket, "Geology and Ore Deposits of the Philipsburg Quadrangle, Montana," by W. H. Emmons and F. C. Calkins, *Prof. Paper 78*, 1913.

**Utah.** Geologic Map and Sections of the Mining Districts of the San Francisco Region, Utah. 1913. Topography by W. M. Beaman and Fred McLaughlin. Surveyed in 1904-1905 and 1909. Geology by B. S. Butler. 1:62,500. 38°32.6' - 38°20.0' N.; 113°21' - 113°3' W. 16 colors. Accompanies, as Plate I in pocket, "Geology and Ore Deposits of the San Francisco and Adjacent Districts, Utah" by B. S. Butler, *Prof. Paper 80*, 1913.

[Topographic base that of the Frisco special map, Utah.]

**Washington.** (a) Drainage Map of Cowlitz River, Washington. Compiled from Land Office maps and special surveys; also from surveys of the Valley Development Co. 1912. 1:250,000. [46°45' - 46°2' N.; 123°13' - 121°20' W.]

(b) Map of Nisqually and Puyallup River Drainage Basins, Washington. Compiled from General Land Office map and U. S. Geological Survey topographic sheets. 1912. 1:250,000. [47°18' - 46°30' N.; 123°0' - 121°30' W.]

(c) Map of White, Green, and Cedar River Drainage Basins, Washington. Compiled from General Land Office map and U. S. Geological Survey topographic sheets. 1912. 1:250,000. [47°40' - 46°50' N.; 122°30' - 121°20' W.]

Accompany as Pls. I, IV and XI respectively, "Water Powers of the Cascade Range: Part II—Cowlitz, Nisqually, Puyallup, White, Green, and Cedar

Drainage Basins'' by F. F. Henshaw and G. L. Parker, *Water-Supply Paper* 313, 1913.

[Each map shows the complete hydrographic system of the drainage basin represented (outline of the latter given); also the main peaks, the roads and railroads, and the county, township, range and section boundaries.]

#### NORTH AMERICA

**Canada-Alaska.** Sketch Map to illustrate the paper on the Arctic Islands and their Eskimo Inhabitants by V. Stefansson. 1:8,000,000. 77°-65° N.; 170°-100° W. 1 color. Accompanies ''The Distribution of Human and Animal Life in Western Arctic America'' by V. Stefansson, *Geogr. Journ.*, Vol. 41, 1913, No. 5, pp. 449-460.

[Shows Stefansson and Anderson's routes during their last expedition. Base, in so far as new, essentially the same as on the similar map published in the *Bull.*, Vol. 45, 1913, No. 2, facing p. 106.]

#### CANADA

**Canada.** Railway Map of the Dominion of Canada. [Compiled under the direction of] J. E. Chalifour, Chief Geographer. 1912. 1:2,217,600. 73°-39° N.; 152°-53° W. 10 colors. In 8 sheets. Department of the Interior, Ottawa.

[A new edition of this standard general map of Canada on a large scale. The title only indicates one phase of the map, for essentially it is a base map. As a base map of the whole of Canada it is only available in this railway edition; portions of it, however, have been issued separately to represent various other phenomena. The present edition differs in various ways from the preceding of 1907: the 98th meridian has been chosen as the central meridian of the map instead of the 110th. The result is a map that is much better balanced, the pronounced obliqueness of the Maritime Provinces on the eastern edge of the previous edition being greatly reduced. The area of the map has been extended to the north so as to include almost all of Victoria and Baffin Islands.

As a base map the map represents very completely the locational element; no relief is shown. Due to its relatively large scale the less-known northern portions of Canada are shown in more than usual detail; this fact should possibly have enjoined somewhat greater care in distinguishing between actual surveys and outlines that are approximate only. While the northern coast of the Fox Basin is justly represented by means of a dotted line, the full outlines of its eastern coast as well as of the two great interior lakes of Baffin Island, Nettilling and Amadjuak, might create a confidence in their trustworthiness not warranted by the fact that for the representation of these regions we still have to rely on Eskimo drawings. Similarly the outline of Southampton Island appears to be definite; but, although Capt. Comer's map has been utilized (see *Bull.*, Vol. 42, 1910, facing p. 84) it must be remembered that his map is not based on an instrumental survey. The results of recent Arctic exploration have on the whole been very completely incorporated. One or two exceptions may be noted. Although Hansen's survey of the east coast of Victoria Island during Amundsen's Northwest Passage Expedition has been used, his corrected outline of the south coast of King William Island has been overlooked. The chain of lakes to the east of the Mackenzie delta are represented as having their outlet into the Arctic Sea in 131½° W. long.; A. H. Harrison's map, accompanying his ''In Search of a Polar Continent,''' states that they empty into Liverpool Bay in 128½° W.

These criticisms, however, relate to minor features and should in no way obscure the recognition of the fact that the map is unqualifiedly the standard of its class.

With regard to the nominal purpose of the map, to represent the railroads of Canada it may be said that it does this very efficiently by means of colored lines representing the different systems and by means of numbers referring to



an index. The main oceanic and inland water transportation routes are also given with distances between the chief ports. The map is also authoritative in the representation of the political divisions, the new extensions of Manitoba, Ontario and Quebec to Hudson Bay being shown.]

## CENTRAL AMERICA AND WEST INDIES

**Panama-Colombia.** Map to illustrate the paper by Sir Clements Markham on Vasco Nuñez de Balboa's Discovery of the Pacific Ocean. 1:1,500,000. 10°0' - 7°30' N.; 80°30' - 76°30' W. 2 colors. With inset, 1:75,000,000, showing general relationships. Accompanies "Vasco Nuñez de Balboa, 1513-1913" by C. R. Markham, *Geogr. Journ.*, Vol. 41, 1913, No. 6, pp. 517-532.

[Illustrates the topography of the part of Isthmus discussed. Relief in brown shading, drainage in blue.]

## SOUTH AMERICA

**Argentina.** (a) Karte des Weges von Barreal zum Rio de las Vacas (Argentinische Kordilleren-Provinz San Juan). Unter Benutzung der Karten der Grenzkommissionen und nach eigenen Aufnahmen gezeichnet von Franz Kühn. 1:250,000. 31°27' - 32°38' S.; 70°26' - 69°21' W. 9 colors. With map of South America, 1:60,000,000, showing location of main map.

(b) Gliederung der Kordillere im Forschungsgebiet von Franz Kühn. 1:1,350,000. 31° - 33° S.; 70½° - 69° W.

Accompany, as Taf. 6 und as text-figure on p. 11, respectively, "Aus den Hochkordilleren von San Juan (Argentinien)" (first part) by F. Kühn, *Pet. Mitt.*, Vol. 59, II, 1913, July, pp. 10-15.

[Map (a) shows the main ranges of the Andes north of Mt. Aconcagua where crossed by Dr. Kühn's route; symbols for geological formations, pastures and cultivated areas; relief (in brown shading) rather indefinite. Map (b) shows the arrangement of the ranges by means of diagrammatic crest lines.]

## AFRICA

**British East Africa.** Sketch Map of a Journey from Kismayu to Meru via Wajheir and Lorian. By C. W. Haywood. 1912. 1:3,000,000. 2½° N. - 1° S.; 37½° - 43° E. Accompanies, on p. 465, "The Lorian Swamp" by C. W. Haywood, *Geogr. Journ.*, Vol. 41, 1913, No. 5, pp. 463-468.

[Route survey in the relatively little-known northeastern half of British East Africa, which had as its object to determine whether the Naso Nyiro River, which feeds the Lorian Swamp, also flows out of it. For the authoritative map of this region see Dracopoli's map in next entry.]

**British East Africa.** Kismayu to the Lorian Swamp from Route Surveys by I. N. Dracopoli. 1:1,500,000. 1°30' N. - 1°0' S.; 38°30' - 43°0' E. 2 colors. With inset, 1:15,000,000, showing location of main map. Accompanies "Across Southern Jubaland to the Lorian Swamp" by I. N. Dracopoli, *Geogr. Journ.*, Vol. 42, 1913, No. 2, pp. 128-142.

[Valuable route survey, checked by astronomic determinations, along the Naso Nyiro to the Lorian Swamp and through the ill-known district lying south of the lower course of the Lak Dera, by which name the river-bed issuing from the Lorian Swamp and draining into the Indian Ocean is known. This survey has solved the drainage problem as to the outlet of the Lorian Swamp. The conditions are as follows: The Naso Nyiro River rises to the northwest of the massif of Mt. Kenia, on the equator and in 37° E. long., flows as a perennial stream in a generally easterly direction through Lorian Swamp (1° N. and 39½° E.) to about 11 miles beyond its eastern edge. From here it continues easterly as a dry river-bed under the name of Lak Dera until it finally reaches the Juba River (at the equator and in 42½° E. long.) shortly above where the latter empties into the Indian Ocean. The accompanying account is a model of what an explorer's narrative should be.]

**German East Africa.** Umgegend der Missionsstation Rugari in Urundi (Deutsch-Ostafrika) mit dem ausgelaufenen Rufunso Schisanje. Nach Aufnahmen aus den Jahren 1908-1911 vom Oberen J. M. M. Van der Burgt. 1:100,000. 2°48' - 2°59' S.; 30°21' - 30°35' E. 1 color. Accompanies, as Taf. 5, "Ein Naturereignis in Urundi (Deutsch Ostafrika)" by J. M. M. Van der Burgt, *Pet. Mitt.*, Vol. 59, II, 1913, July, p. 24.

[Region between Lake Victoria and the northern end of Lake Tanganyika. Relief in brown shading.]

## ASIA

**Russian Central Asia.** Die alte Verbindung zwischen dem Oxus und dem Kaspischen Meer. Von Dr. A. Herrmann. 1:5,000,000. 46½° - 36½° N.; 50° - 65½° E. 3 colors. Accompanies, as Taf. 14, paper with same title by same author, *Pet. Mitt.*, Vol. 59, II, 1913, Aug., pp. 70-75.

[Shows the probable course of the old outlet of the Amu-darya into the Caspian Sea.]

## EUROPE

**France.** Das nach der "Ora maritima" Aviens rekonstruierte Aude-mündungsgebiet in seinem Verhältnis zu dem nächstfrüheren und dem heutigen Hauptentwicklungsstadium. Auf Grundlage der Carte de France d'Etat-Major 1:80,000. Von Johannes Frank. 1:80,000. 43°22' - 43°0' N.; 2°56' - 3°19' E. 10 colors. With inset: Hafstadium der Küste des Golfes von Rosas rekonstruiert nach Aviens "Ora maritima." Auf Grund von Coellos Atlas de España (1:200,000). 1:200,000. [42°10' N. and 3°10' E.] 3 colors. Accompany, as Taf. 4, "Aviens 'Ora maritima' und ihr Wert für das entwicklungsgeschichtliche Studium der Mittelmeerküsten Frankreichs und Spaniens" by J. Frank, *Pet. Mitt.*, Vol. 59, II, 1913, July, pp. 5-9.

[Reconstruction of the western lagoon coast of the Golfe du Lion on the basis of a didactic geographical poem by the Roman author Avienus of the fourth century A.D. As this poem is probably based on Greek sailing directions which in part date as far back as 575 B. C. there is a record of 2,500 years for the interpretation of coastal changes.]

**Germany-Austria.** Probeausschnitte aus: Vogels Karte des Deutschen Reichs und der Alpenländer. Blätter Berlin und Wien. 1:500,000. [Two parts:] (1) [Section from Berlin sheet]. 52°48' - 51°20' N.; 11°0' - 12°25' E. 7 colors. (2) [Section from Vienna sheet]. 48°30' - 47°5' N.; 15°10' - 16°30' E. 5 colors. Accompany "Die ersten Blätter der Neuausgabe von Vogels Reichskarte" by F. Hahn, *Pet. Mitt.*, Vol. 59, I, 1913, June, pp. 308-309.

[Sample of two sheets of a new edition of the well-known map of Germany, 1:500,000, by Carl Vogel. In the new edition the map has been expanded from 27 to 33 sheets to embrace all territory occupied by German-speaking peoples. The six new sheets (25: Budweis, 29: Vienna, 30: Geneva, 31: Milan, 32: Triest, 33: Agram) extend the southern limits of the map to the latitude of the three last mentioned cities and in the southeast to the longitude of Vienna. The former distinct editions with colored political boundaries and with woods shown in green have been amalgamated: this was made possible by the selection of transparent colors for the political boundaries which would not, when superimposed, obscure the brown of relief or the green of forests. In this new edition the map bids fair to maintain its position as one of the best generalizations extant of the detailed topographic sheets of a country.]

**Germany.** Deutsche Grossstädte als geographische, politische und wirtschaftliche Einheiten. Entworfen von Dr. Konrad Olbricht. (1) [Maps of 23 city groups, 1:500,000, viz:] Bremen, Hamburg, Kiel, Stettin, Danzig, Düsseldorf-Köln, Münster, Hannover, Berlin, Zabrze-Beuthen-Königshütte-Kattowitz, Aachen, Wiesbaden-Mainz-Frankfurt, Kassel, Halle-Leipzig, Dresden, Darmstadt, Nürnberg, Chemnitz, Mannheim, Saarbrücken, Stuttgart, München. 1 color. (2) Umgebungskarte von Berlin. 1:2,250,000. 1 color.

Accompanies, as Taf. 12, "Die deutschen Grossstädte" by K. Olbricht, *Pet. Mitt.*, Vol. 59, II, 1913, Aug., pp. 57-67.

[Maps under (a) suggestive diagrammatic maps showing the true geographical city, i. e. the extent of the built-up area as contrasted with the administrative area. The outer limit of the economic sphere of influence of each city is also shown. Due to the small scale only the outlines of the cities are represented. Map (b) shows the progressive expansion of Berlin's economic influence.]

**Germany.** (a) Geologische Übersicht der Umgebung von Marburg a. d. Lahn. Gezeichnet von stud. phil. Ernst Vatter. 1:50,000. [49°54' - 49°42' N.; 8°42' - 8°56' E.] 10 colors.

(b) Orographische Übersicht der Umgebung von Marburg a. d. Lahn. Gezeichnet von J. Graefen. Same scale and coordinates as map (a). 5 colors.

(c) Das Lahnbett bei Argenstein und Roth. Gezeichnet von Dr. Otto Maull. 1:30,000. [49°44' N. and 8°44' E.] 3 colors.

(d) Die Entwicklung des Stadtbildes von Marburg. Gezeichnet von stud. phil. Julius Paulsen. 1:16,000. [49°49' N. and 8°46' E.]

Accompany as Pls. 8, 9, 16 and 23 respectively, "Geländestudien des Geographischen Seminars in Marburg, etc." by A. Rühl, *Geogr. Anz.*, Vol. 13, 1912, No. 1, pp. 1-4, No. 2, pp. 25-28, No. 3, pp. 60-63, No. 4 (no text).

[The paper which these maps illustrate is based on the lecture which Professor Theobald Fischer of Marburg was in the habit of giving when taking his students on an excursion to study the geographical location of Marburg. His intention to work it up in final form was interrupted by his death, three years ago. Map (b) represents relief in five tints, varying from green to brown, superimposed on the official Hessian map with hachures in black. Map (d) represents the growth of Marburg by distinguishing between the areas representing the city's expansion during a given period.]

**Germany.** Gebietsaustausch zwischen dem Grossherzogtum Sachsen und dem Herzogtum Sachsen-Meiningen. Nach dem Staatsvertrag vom 1. Januar 1913. [One general map and four detailed maps:] (1) Übersicht der Austauschgebiete. 1:500,000. [51°4' - 50°36' N.; 11°0' - 12°15' E.]. 3 colors. (2) (Einzelpläne, 1:50,000: I. Lichtenhain bei Jena. II. Kranichfeld, Stedten, Hohenfelden. III. Köstitz bei Pössneck. IV. Mosen bei Weida). 2-6 colors each. Accompany, as Taf. 3, note with similar title, *Pet. Mitt.*, Vol. 59, II, 1913, July, p. 24.

[Insignificant changes in the political mosaic of Thuringia.]

#### WORLD AND LARGER PARTS

**Southern Pacific and Indian Oceans.** [Sketch map showing soundings south of Tasmania and southwest of New Zealand.] [Mean meridional scale 1:22,000,000.] Accompanies on p. 461 "Discovery by the Australasian Antarctic Expedition of Important Submarine Banks" by T. W. E. David, *Geogr. Journ.*, Vol. 41, 1913, No. 5, pp. 461-463.

[Soundings by Capt. J. K. Davis of the Australasian Antarctic Expedition establishing the existence of a submarine bank in 47° S. and 148° E., which seems to furnish additional proof of the former land connection between Australia and South America via Tasmania and the Antarctic Continent.]

#### ATLASES

**Commercial Values: An Atlas of Raw Materials of Commerce and Commercial Interchanges.** By Mark Jefferson, Professor of Geography in the Michigan State Normal College. 64 pp. (33 maps, and text on 29 pp). Ginn & Co., Boston, New York, etc., 1912. 25 cents. 7 x 10 inches.

[An excellent atlas representing graphically the value of the chief raw materials of the world's commerce. It accomplishes this by using five symbols to designate certain grades of value (1, 5, 10, 50 and 100 million dollars) and by placing, on maps of the world, the appropriate number of these symbols on the respective countries. The locational element is thus far better represented

than on the usual diagrams of the value of commercial products which make use of lines, rectangles or sectors of proportional dimension. In fact, the maps in the atlas are intermediate between geometric representations of absolute values and geographical representations of relative distribution. There is a world map of each of the following products: rice, wheat, potatoes, corn, coal, oats, rye, cotton, iron, barley, sugar, wool, gold, copper, coffee, petroleum, raw silk, rubber (exports), tea, lead, silver, zinc and tin, ranged in the sequence of the value of their world totals; occasional inset maps represent critical regions, as the United States for corn and cotton and Europe for potatoes, etc. In addition there are eight world maps showing the foreign sales and purchases of the United States, the United Kingdom, Germany and France; a map showing the principal inhabited area of the globe, together with the main steamship routes, a rainfall map of the world and a cartogram showing the population in millions of the civilized countries of the world. The use of Mollweide's projection for the maps and the reference of all values to the same year (1909, as the last for which statistics for the whole world were available) and their reduction to American market prices are evidences of the soundness of the author's method. The suggestive questions which accompany each map and bring out its salient features make the atlas an eminently practical teaching instrument, and its extremely low price likewise adapts it admirably to school use.]

**Hammond's Comprehensive Atlas of the World.** 256 pp. of maps; 256 pp. of text ("compendium of geography" and Index-Gazetteer). C. S. Hammond & Co., New York, 1913. \$4.  $9\frac{1}{2} \times 6\frac{1}{2}$  inches.

[The usual type of wax-engraved maps with all their crudeness and imperfect color registration. In the latter respect the altitude map of the United States (pp. 24-25) is a special delight to the eye. Casual contact with geographic thought is evidenced by the series of economic and other world maps (pp. 96 to 107 incl. and p. 256) on Gall's projection (evidently taken from publications of the Edinburgh Geographical Institute) and by the map of the world on Mollweide's projection (p. 1), the recent discovery of which by the compiler is indicated by his designation of it as "new" and the understanding of whose properties is attested by the explanation that it is "the only projection in which are shown the equivalent areas . . . of all parts of the globe in their proper relative position." When it is remembered that such a masterpiece of geographic knowledge and cartographic skill as Debes's *Neuer Hand-atlas* may be purchased for only \$2.75 more than this atlas, the anomaly which it represents will become apparent.]

**Petit Atlas du Congo Belge.** 16 colored and 8 black-and-white maps, 16 diagrams and index. Maison d'Édition A. de Boeck, Brussels, [1912]. 2 frs.  $8 \times 5$  inches.

[Excellent little atlas portraying all phases of the geography of the Belgian Congo. There are general maps showing the larger traits of relief, the geology, hypsometry, rainfall, vegetation, ethnography, density of population, exploration, economic development and administrative divisions of the Belgian Congo as a whole and six physical maps on the scale of 1:6,000,000 showing the different parts of the country in greater detail. The maps throughout give evidence of a truly geographic spirit. They are taken in part from "Le Congo Belge" by Professor J. Bertrand of the Institut Géographique de l'Université Nouvelle de Brussels. The use of pale blue for some symbols is unfortunate, especially on the map showing explorers routes (Plate III).]

**Philips' Elementary Atlas of Comparative Geography.** Edited by George Philip, F.R.G.S. 40 plates containing over 90 maps and plans, and 8 pages of introductory letterpress. George Philip & Son, Ltd., London (edition of 1912?). 1s.  $10\frac{1}{2} \times 9$  inches.

[Thoroughly in keeping with modern methods. Physical maps form the bulk of the atlas; these are supplemented by climatological, vegetational, ethnographic and political insets. All scales used are commensurable. The use of black hairlines to bound the various hypsometric tints might preferably have been avoided as it sometimes makes for too rigid an appearance.]